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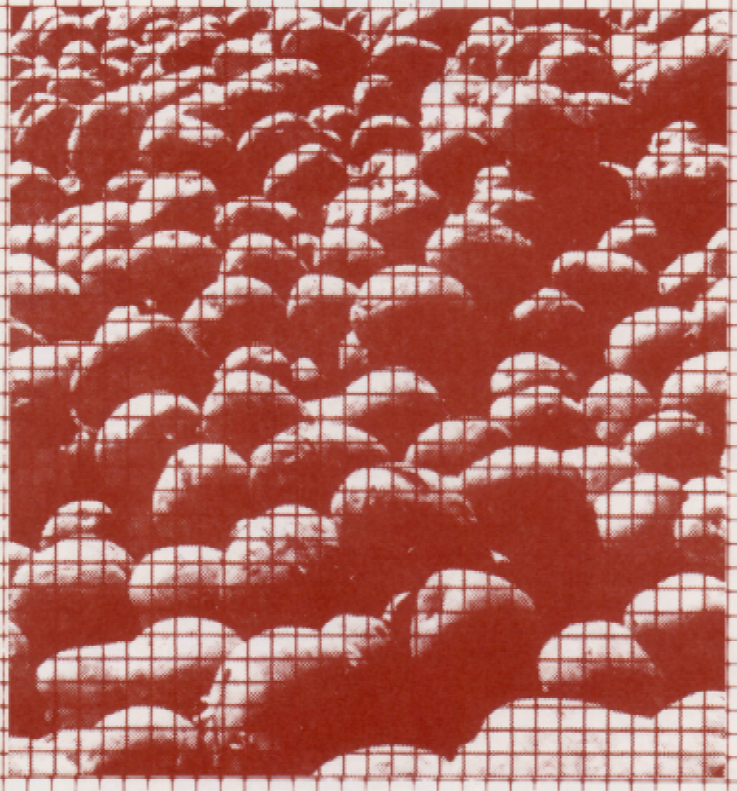
# Costs of Producing Potatoes

## 1980 and 1981 with Projections for 1982

Glenn A. Zepp





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COSTS OF PRODUCING POTATOES--1980 AND 1981 WITH PROJECTIONS FOR 1982, by Glenn A. Zepp. National Economics Division, Economic Research Service, U.S. Department of Agriculture, Agricultural Economic Report No. 491.

ABSTRACT

Costs of production for fresh potatoes will increase only slightly for 1982; substantially reduced seed costs should offset other operating cost increases. Processing potato costs should range from almost unchanged in the Red River Valley to a 4.2-percent increase in western Idaho. Central Wisconsin showed the lowest total cost for producing fresh potatoes, while Maine had a cost advantage over other producing areas for supplying fresh potatoes to northeastern U.S. markets. Eastern Idaho showed the highest cost per hundredweight for fresh potatoes. Washington's Columbia River Basin had the lowest cost for growing, harvesting, and storing processing potatoes, while the Minnesota/North Dakota Red River Valley had the highest. This study estimates costs for producing, storing, and packing potatoes in major U.S. production regions during 1980 and 1981 with projections for 1982.

Keywords: Potatoes, potato production, potato costs

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INTRODUCTION

About 1.2 million planted acres yielded 302,857 million hundredweight (cwt) of potatoes in the United States during 1980. The value of this production totaled $2.0 billion. Idaho led all States in area planted, production, and value of potatoes (table 1). The other top four States in planted area included North Dakota, Maine, Washington, and Minnesota. This study estimates costs for producing, storing, and packing potatoes in the major U.S. production regions during 1980 and 1981 with projections for 1982. Costs for the 1980 crop were budgeted for potatoes grown during the summer of 1980, harvested in the fall of that year, and marketed during the winter of 1981. Estimates for the 1981 crop and projections for the 1982 crop were derived by indexing the components of crop costs by changes occurring in input prices paid by farmers for the individual components.

Production Areas

Costs were estimated for seven situations: 1) round white potatoes for fresh consumption (tablestock potatoes) produced in Maine (mostly in Aroostook County), 2) round white potatoes for processing produced in the Minnesota/North Dakota Red River Valley, 3) russet tablestock potatoes grown in central Wisconsin, 4) russet potatoes for processing grown in the Washington Columbia River Basin (in central and south-central Washington), 5) russet tablestock potatoes grown in eastern Idaho, 6) russet potatoes for processing grown in south-central Idaho, and 7) russet potatoes for processing grown in southwestern Idaho.

Since potato production within Idaho shows such diversity, three budgets were developed for the State. The southwest and south-central counties of Idaho produce potatoes primarily for processing. In southeastern Idaho, potatoes for fresh consumption account for the largest share of production with processing and seed uses ranking second and third, respectively.

Many of Oregon's potatoes grow in areas contiguous to Washington State production or to southwest Idaho production. Production specialists indicate that potato growers in the Columbia River basin of Oregon follow production practices similar to those of Washington growers, and that costs for the Washington area should represent those for Oregon's Columbia River basin. Similarly, they indicate that potato production costs for southwest Idaho should represent costs for Malheur County, Oregon production.

## Definition of Costs

Production costs included all expenses incurred for growing, harvesting, hauling, and unloading potatoes into storage. Costs beyond that point accrue to the storage function. Storage costs include expenses for all handling and caring for potatoes following the unloading into storage until they are moved out of storage and loaded into a truck or placed in the feed hopper of an instorage packing line.

Costs in this study represent revisions of estimates reported earlier in Potato Facts (6). 1/ The current estimates represent average costs, and run lower than the previously reported estimates which represent typical costs for an operation starting up during 1980. The principal difference between the two estimates lies in the method for estimating interest and tax charges for buildings and machinery. In the earlier estimates, interest and taxes were charged on investment in buildings and equipment as if they had been purchased in 1980. Interest and taxes on investments in the current cost estimates were charged on estimates of actual acquisition costs for buildings and machinery in use during 1980.

Packing costs include all expenses following the loading of potatoes out of storage through loading the packaged product on a

Table 1--Area planted, production, and value of U.S. potatoes, 1980 crop

| State | Area planted | Production | Value of production |
|---|---|---|---|
| | 1,000 acres | 1,000 cwt | 1,000 dollars |
| Idaho | 305.0 | 79,840 | 451,096 |
| North Dakota | 114.0 | 15,680 | 107,408 |
| Maine | 108.0 | 24,960 | 180,960 |
| Washington | 87.0 | 43,935 | 193,314 |
| Minnesota | 70.5 | 11,486 | 91,731 |
| Wisconsin | 52.5 | 16,000 | 161,600 |
| California | 50.5 | 18,692 | 168,901 |
| Oregon | 48.0 | 19,745 | 90,761 |
| New York | 45.0 | 11,044 | 97,628 |
| Colorado | 43.0 | 12,545 | 84,296 |
| Other | 258.5 | 48,930 | 351,261 |
| United States | 1,182.0 | 302,857 | 1,978,956 |

Source: (5).

1/ Underscored numbers in parentheses refer to items listed in the references section at the end of this report.

truck ready for shipment. Total cost free on board (f.o.b.) the storage represents growing, harvesting, and storage costs plus a charge for weight loss by potatoes in storage. 2/ Total cost f.o.b. the packinghouse includes all f.o.b. storage costs plus charges for grading losses and package overweight. Total costs for fresh potatoes delivered to major cities consist of total costs f.o.b. the packinghouse plus a transportation cost estimated from reported truck rates (1).

COSTS OF PRODUCTION

Estimated costs in this study represent those costs typical for established growers. Potato production costs included all direct expenses plus a fixed charge per acre for indirect expenses incurred jointly with other enterprises. Nonpurchased inputs such as owned land and unpaid family labor used in potato production were also charged at the current cash rental rate for the region. Interest was charged at the current market rate on all capital investments and operating capital, regardless of whether financing was with borrowed money or the farmers' own capital. A management fee was charged against potatoes regardless of whether a hired manager or unpaid family member filled the function. All purchased supplies were charged at 1980 price levels.

Costs were estimated by budgeting and reflect actual input use rates (technical coefficients) and prices paid per unit of input. Technical coefficients represent the physical quantities of inputs such as pounds of nitrogen fertilizer, or hours of labor used. Unit prices represent averages of prices paid by potato growers in each region during the 1980 season.

Data from a 1976 USDA survey served as the basis for the technical coefficients in the growing and harvesting budgets. 3/ Typical practices and performance data recorded for 1976 were used as first estimates for 1980 rates. These estimates were evaluated and refined through an informal survey of producers, potato extension specialists, and researchers during the summer of 1980 to determine if changes had occurred since the 1976 survey. Since central Wisconsin was not included in the 1976 survey, all technical coefficients for this area were derived through discussions with potato industry personnel. Storage, packing, and selling costs were based on information from farmers, packers, equipment manufacturers and dealers, and others during the summer and fall of 1980.

2/ Cost per cwt, f.o.b. the storage refers to all costs up to and including the loading of potatoes on a truck for shipment. The f.o.b. storage cost does not include expenses for transportation from storage to the processing plant.

3/ USDA's Statistical Reporting Service conducted a survey of potato growers in Maine, Idaho, North Dakota, Minnesota, and Washington in 1976. The survey included a complete description of production practices, equipment and machinery use, input use, and potato yields.

All costs reflected 1980 price levels. No attempt was made to distinguish costs among different size farms. The costs represent those for average or typical size farms for each region. When appropriate, prices were based on "prices paid by farmers" as reported in Agricultural Prices (3). Hourly labor costs were based on wages reported in Farm Labor (4) plus a markup to cover other labor benefits and taxes. For items not reported in these publications, prices from the 1976 survey were indexed to 1980, or were based on information obtained from farm suppliers, growers, or other potato industry personnel during the summer of 1980.

Growing and harvesting costs represented expenses for potatoes planted in the spring and harvested during the fall of 1980. Production expenses for these potatoes occurred during the spring and early summer. Storage costs represent expenses for potatoes placed in storage during the fall of 1980 and held through the 1980/81 winter; packing costs represented expenses for potatoes that were stored 6 months and packed during the 1980/81 winter/-spring period.

Producers sold their 1976 potato crop for three principal uses: tablestock (or fresh use), processing, and seed (table 2). Regions vary considerably by distribution of sales among these uses. In Maine, for example, tablestock potatoes accounted for the largest single use with 46 percent tablestock sales, while in the Red River Valley, Washington, and southwest and south-central Idaho, potatoes for processing made up the largest portion of sales. Eastern Idaho sold about 50 percent of its crop for tablestock in 1976. Feed and other uses accounted for only a small share of the potatoes used in all areas.

Fertilizer

Potato growers responding to the 1976 survey reported fertilizer use by type of fertilizer. Fertilizer use varied considerably by regions and growers within regions, primarily because of differences in natural soil fertility and production practices (table 3). The 1976 fertilizer use was judged typical for 1980.

Fertilizer is used most heavily in the irrigated production region of Washington, where applications averaged almost 400 pounds of nitrogen per acre and more than 200 pounds each of phosphorus and potassium. With irrigation and a relatively long growing season, potatoes in this area can utilize large amounts of fertilizer, which is reflected in the highest yields of all areas studied. The Red River Valley used the least fertilizer of all study areas. This area grows nonirrigated potatoes and produces the lowest yields.

Seed

As with fertilizer, Washington potato growers used the most seed per acre in 1976 and the Red River Valley growers the least (table 4).

Pesticides

Almost all survey growers reported using insecticides, fungicides, and herbicides in potato production during 1976. Many Washington growers fumigated their soil before planting potatoes. Some growers also applied a desiccant prior to harvest

Table 2--Uses of harvested potatoes sold by survey farms, selected regions, 1976

| Region | Potato use | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Tablestock | | Processing | | Seed | | Feed and other, including starch | | Total |
| | 1,000 cwt | Pct. | 1,000 cwt | Pct. | 1,000 cwt | Pct. | 1,000 cwt | Pct. | 1,000 cwt |
| Maine | 1,594 | 46 | 1,171 | 34 | 673 | 20 | 11 | 0 1/ | 3,499 |
| Red River Valley | 679 | 14 | 2,499 | 51 | 1,650 | 34 | 67 | 1 | 4,895 |
| Washington | 4,183 | 17 | 19,667 | 82 | 136 | 1 | 36 | 0 | 24,022 |
| Idaho: | | | | | | | | | |
| Southwest | 53 | 2 | 2,756 | 98 | 0 | 0 | 0 | 0 | 2,809 |
| South-central | 137 | 2 | 6,136 | 91 | 433 | 6 | 38 | 1 | 6,734 |
| Eastern | 3,353 | 50 | 2,098 | 31 | 1,135 | 17 | 96 | 2 | 6,682 |

1/ Percentages may not reflect all use because of rounding.
Source: 1976 five-State survey, Statistical Reporting Service, USDA.

Table 3--Fertilizer use per acre for potato production on survey farms, selected regions, 1976

| Fertilizer | Region | | | | | |
|---|---|---|---|---|---|---|
| | Maine | Red River Valley | Washington | South-west Idaho | South-central Idaho | Eastern Idaho |
| | Pounds/acre | | | | | |
| Nitrogen | 157 | 89 | 393 | 269 | 262 | 222 |
| Phosphorus | 193 | 87 | 218 | 202 | 173 | 160 |
| Potassium | 209 | 47 | 236 | 67 | 37 | 43 |

Source: 1976 five-State survey, Statistical Reporting Service, USDA.

Table 4--Seed used per acre for potato production on survey farms, selected regions, 1976

| Region | Amount |
|---|---|
| | Cwt/acre |
| Maine | 21.28 |
| Red River Valley | 14.37 |
| Washington | 22.64 |
| Idaho: | |
| Southwest | 20.24 |
| South-central | 21.65 |
| Eastern | 20.38 |

Source: 1976 five-State survey, Statistical Reporting Service, USDA.

to kill the potato vines, and a few applied a sprout inhibitor to the plants to retard sprouting of potatoes during storage.

Pesticide and other chemical use was based on that reported by extension and research specialists, farmers, and farm suppliers as typical for 1980 in each area. Although some growers use different chemicals from those quoted, the costs represent a large share of the potato production in each area.

Machinery and Equipment

Machinery and equipment costs include expenses for fuel, repairs, and maintenance, and ownership charges for replacement, interest, taxes, insurance, and housing. Machinery and labor requirements

were developed for each region from the 1976 USDA survey in consultation with potato growers and potato extension and research specialists. Costs per acre were estimated by multiplying the hours of use for each piece of equipment by the hourly charge for that item.

Hourly maintenance, repair, and operating costs for machinery were computed using secondary information obtained primarily from the Agricultural Engineers Yearbook (2). A replacement charge based on the 1980 cost of new machinery was computed in lieu of depreciation, representing contributions to a capital reserve for the purchase of new machinery when the old wears out. Successful operation of a farm requires that the flow of income be sufficient to cover the replacement cost of machinery as well as the cost of labor, services, materials, taxes, and other charges. Interest was charged at a 12.7-percent annual rate and taxes at a 2-percent annual rate on the estimated actual investment for machinery in use during 1980. 4/ The annual charge for machinery, insurance, and housing equaled 2 percent of average investment on the 1980 cost of machinery. Hourly costs were computed by dividing the annual charge by estimated hours of annual use.

Labor

All labor used in production and harvesting was charged in the potato budgets. Unpaid family labor was charged to the potato enterprise at the same wage that hired labor would have been paid for doing the same work. In the case of labor used in conjunction with a machine, labor hours exceeded machinery hours by 25 percent. The additional labor represents startup and shutdown operations and other time during which workers are employed but are not operating farm equipment.

Wage rates were based on those reported for May 1980 in Farm Labor (4). Different rates were charged for machinery operator labor. The hourly cost of labor charged to the potato enterprise exceeded the direct wage by 15 percent to cover benefits, wage taxes, and other labor overhead costs.

Land Charge

Several methods may be used to estimate a land charge: 1) cash rent, 2) net share rent, 3) an annual interest charge on the current market value of land, 4) expected net returns to land in the most appropriate alternative crop (opportunity cost) or, 5) a composite of several of these. No single procedure is most

4/ Estimated actual investment was developed in the following way: Actual investment =[(purchase price + salvage value) ÷ 2] x inflation factor. The inflation factors were 0.68 for machinery and 0.38 for buildings. The inflation factors adjusted 1980 values to the average midlife value of farmers actual inventory of machinery (buildings). Inflation factors were defined as the ratios (1976 index of prices paid for tractors and machinery) divided by (1980 index of prices paid for tractors and machinery) and (1970 index of prices paid for building and fencing) divided by (1980 index of prices for building and fencing).

appropriate for all purposes. In fact, land and family labor often claim residual income with no direct charge being calculated. The cash rent concept was used in determining the land charge in this study.

Typical cash rents for 1980 were determined from those reported by producers and secondary data sources (table 5). The cash rent reflects the value of grower-owned land in alternative uses and therefore represents a cost to the potato enterprise. Growers on survey farms reported as low as 21 percent of their planted potato acreage as cash rented during 1976 in south-central Idaho, and as high as 51 percent in the Red River Valley. Rental rates per acre in 1976 ranged from $24.21 in Maine up to $178.09 in south-central Idaho. Land rental rates in the Washington and Idaho areas represent irrigated land and often include payment for water rights and irrigation facilities. Maine's low rental rates reflect in part the lack of profitable alternative uses for cropland. Land rents in the Red River Valley were higher than in Maine, reflecting the profitability of alternative crops in the valley.

Interest

The interest on preharvest variable costs was calculated using a 12.7-percent annual rate for 6 months. No interest was charged on the variable harvesting costs, since these occurred at the end of the production period. Interest for potatoes held in storage was charged at the 12.7-percent rate for 6 months on total variable growing and harvesting costs.

General Farm Overhead

Farm businesses with multiple enterprises incur necessary costs not directly chargeable to a specific crop. These overhead costs

Table 5--Acres rented for potatoes and land rental rates per acre, survey farms, 1976

| Region | Acres rented for potatoes | Percentage of planted potato acreage rented | Average cash rent per acre |
|---|---|---|---|
| | Number | Percent | Dollars |
| Maine | 3,386 | 22 | 24.21 |
| Red River Valley | 18,732 | 51 | 48.46 |
| Washington | 23,289 | 45 | 156.60 |
| Idaho: | | | |
| Southwest | 3,095 | 35 | 161.92 |
| South-central | 6,408 | 21 | 178.09 |
| Eastern | 9,833 | 30 | 80.74 |

Source: 1976 five-State survey, Statistical Reporting Service, USDA.

include items such as telephone, road maintenance, service building costs, accounting costs, and others. All enterprises in the farm business need to bear a fair share of these costs. The overhead charge for potato growing and harvesting was set at $20 per acre for all areas.

Management Charge

No theoretical guide exists for estimating a management charge for agricultural production. Management and unpaid family labor often jointly claim residual net income after subtracting all other expenses. Wage rates listed for hired farm labor are usually not adequate to actually hire managerial talent or to reward unpaid operators for their managerial services. In this study, management was charged at 10 percent of total costs, less the land charge.

Growing and Harvesting

Growing and harvesting costs were developed for seven areas: fresh potatoes grown in Maine, central Wisconsin, and eastern Idaho, and processing potatoes grown in Washington, south-central Idaho, southwest Idaho, and the Red River Valley.

Fresh Potatoes

Total cost per acre for fresh potatoes ranged from $835.39 in Maine to $1,009.84 in central Wisconsin (table 6). Yields per acre in central Wisconsin were higher than yields in other fresh potato areas, giving Wisconsin the lowest cost per cwt of all the tablestock regions.

Variable costs ranged from a low of $1.81 per cwt in Wisconsin to a high of $2.25 in Maine. Fertilizer, seed, pesticides, fuel, repair, and labor accounted for the major share of variable costs. Land charges constitute an important item of total cost in both eastern Idaho and central Wisconsin. The lower land rent per acre in Maine gives growers there a substantially lower land cost per cwt than in other areas.

Processing Potatoes

Total costs per acre for processing potatoes ranged from a low of $511.55 in the Red River Valley to $1,329.44 in Washington's Columbia River basin (table 7). Areas with highest per acre costs tended to enjoy the lowest cost per cwt of potatoes produced. Due to their very high yields per acre, Washington's growers realized the lowest per cwt costs, while Red River Valley growers, due to their lower yields, realized the highest.

Storage

Storage costs include expenses for storing potatoes from the time stored up to and including the costs for moving them out of storage and placing them on a truck or in the receiving bin of an instorage packing line (table 8). A number of factors affect storage costs, including length of time stored. Costs in this study represent those for 6 months of storage.

Fresh Potatoes

Eastern Idaho had the lowest storage cost ($0.575 per cwt) of the three tablestock producing areas and Maine the highest ($0.814 per cwt). Interest on storage and machinery and building ownership expenses make up the largest share of costs, accounting for about 60 percent of the total.

Table 6--Growing and harvesting costs for tablestock potatoes, selected regions, 1980 crop

| Cost item | Cost per acre | | | Cost per cwt | | |
|---|---|---|---|---|---|---|
| | Maine round white | Eastern Idaho russet | Central Wisconsin russet | Maine round white | Eastern Idaho russet | Central Wisconsin russet |
| | Dollars | | | | | |
| Preharvest variable: | | | | | | |
| Seed | 74.48 | 102.00 | 99.00 | 0.30 | 0.41 | 0.28 |
| Fertilizer | 146.76 | 121.90 | 155.00 | .59 | .49 | .44 |
| Pesticide material | 107.07 | 67.25 | 108.00 | .43 | .27 | .31 |
| Sprout inhibitor | N.A. | N.A. | 9.00 | N.A. | N.A. | .03 |
| Fuel and lube | 23.25 | 19.14 | 22.03 | .09 | .08 | .06 |
| Equipment repair | 22.53 | 14.45 | 23.24 | .09 | .06 | .07 |
| Water charge | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Irrigation power | N.A. | 75.00 | 50.00 | N.A. | .30 | .14 |
| Labor | 24.85 | 20.39 | 28.69 | .10 | .08 | .08 |
| Custom services | N.A. | 19.50 | 2.50 | N.A. | .08 | .01 |
| Interest | 25.33 | 27.92 | 31.59 | .10 | .11 | .09 |
| Preharvest total 1/ | 424.27 | 467.55 | 529.05 | 1.70 | 1.87 | 1.51 |
| Harvest variable: | | | | | | |
| Desiccant material | 12.31 | 4.90 | 7.88 | .05 | .02 | .02 |
| Fuel and lube | 32.03 | 20.55 | 31.10 | .13 | .08 | .09 |
| Equipment repair | 31.39 | 19.69 | 27.83 | .13 | .08 | .08 |
| Labor | 61.49 | 33.72 | 39.06 | .25 | .13 | .11 |
| Custom services | N.A. | 4.50 | N.A. | N.A. | .02 | N.A. |
| Harvest total | 137.22 | 83.36 | 105.87 | .55 | .33 | .30 |
| Total variable 1/ | 561.49 | 550.91 | 634.92 | 2.25 | 2.20 | 1.81 |
| Ownership | 137.48 | 87.71 | 120.45 | .55 | .35 | .34 |
| Other: | | | | | | |
| Land charge | 40.00 | 150.00 | 150.00 | .16 | .60 | .43 |
| General farm overhead | 20.00 | 20.00 | 20.00 | .08 | .08 | .06 |
| Inspection, assessment, and dues | 4.11 | 17.27 | 6.30 | .02 | .07 | .02 |
| Management charge | 72.31 | 67.59 | 78.17 | .29 | .27 | .22 |
| Total other 1/ | 136.42 | 254.86 | 254.47 | .55 | 1.02 | .73 |
| Total 1/ | 835.39 | 893.48 | 1,009.84 | 3.34 | 3.57 | 2.89 |

N.A. = Not applicable.
1/ Components may not add to totals because of rounding.

Table 7--Growing and harvesting costs for processing potatoes, selected regions, 1980 crop

| Cost item | Cost per acre | | | | Cost per cwt | | | |
|---|---|---|---|---|---|---|---|---|
| | Washington russet | Central Idaho russet | Western Idaho russet | Red River Valley round white | Washington russet | Central Idaho russet | Western Idaho russet | Red River Valley round white |
| | Dollars | | | | | | | |
| Preharvest variable: | | | | | | | | |
| Seed | 158.48 | 119.08 | 121.44 | 64.80 | 0.34 | 0.41 | 0.36 | 0.43 |
| Fertilizer | 220.67 | 132.25 | 152.44 | 42.78 | .48 | .46 | .45 | .29 |
| Pesticide material | 179.07 | 71.00 | 100.35 | 44.21 | .39 | .24 | .29 | .29 |
| Sprout inhibitor | 2.97 | N.A. | N.A. | 9.00 | .01 | N.A. | N.A. | .06 |
| Fuel and lube | 20.35 | 17.23 | 21.90 | 15.02 | .04 | .06 | .06 | .10 |
| Equipment repair | 13.39 | 13.35 | 15.47 | 12.82 | .03 | .05 | .05 | .09 |
| Water charge | 20.00 | N.A. | N.A. | N.A. | .04 | N.A. | N.A. | N.A. |
| Irrigation power | 20.00 | 75.00 | 25.00 | N.A. | .04 | .26 | .07 | N.A. |
| Labor | 19.85 | 18.36 | 34.69 | 12.25 | .04 | .06 | .10 | .08 |
| Custom services | 48.80 | 28.50 | 40.00 | N.A. | .11 | .10 | .12 | N.A. |
| Interest | 44.68 | 30.15 | 32.47 | 12.76 | .10 | .10 | .09 | .09 |
| Preharvest total 1/ | 748.26 | 504.92 | 543.76 | 213.64 | 1.63 | 1.74 | 1.59 | 1.42 |
| Harvest variable: | | | | | | | | |
| Desiccant material | 11.25 | 2.45 | N.A. | 6.00 | .02 | .01 | N.A. | .04 |
| Fuel and lube | 25.06 | 22.48 | 25.91 | 20.21 | .05 | .08 | .08 | .13 |
| Equipment repair | 23.98 | 21.03 | 23.76 | 19.59 | .05 | .07 | .07 | .13 |
| Labor | 41.28 | 32.93 | 37.37 | 31.53 | .09 | .11 | .11 | .21 |
| Custom services | 5.50 | 6.50 | N.A. | N.A. | .01 | .02 | N.A. | N.A. |
| Harvest total 1/ | 107.07 | 85.39 | 87.04 | 77.33 | .23 | .29 | .25 | .52 |
| Total variable 1/ | 855.33 | 590.31 | 630.80 | 290.97 | 1.86 | 2.04 | 1.84 | 1.94 |
| Ownership | 91.91 | 85.89 | 98.85 | 76.85 | .20 | .30 | .29 | .51 |
| Other: | | | | | | | | |
| Land charge | 225.00 | 175.00 | 250.00 | 80.00 | .49 | .60 | .73 | .53 |
| General farm overhead | 20.00 | 20.00 | 20.00 | 20.00 | .04 | .07 | .06 | .13 |
| Inspection, assessment, and dues | 36.80 | 19.40 | 22.16 | 4.50 | .08 | .07 | .06 | .03 |
| Management charge | 100.40 | 71.56 | 77.18 | 39.23 | .22 | .25 | .23 | .26 |
| Total other 1/ | 382.20 | 285.96 | 369.34 | 143.73 | .83 | .99 | 1.08 | .96 |
| Total 1/ | 1,329.44 | 962.16 | 1,098.99 | 511.55 | 2.89 | 3.32 | 3.21 | 3.41 |

N.A. = Not applicable.

1/ Components may not add to totals because of rounding.

The large storage volume typical of sheds in eastern Idaho and the relatively low cost of the storage structure per cwt of capacity contributed to this area's low storage cost. Idaho potato storage facilities typically have a dirt floor, while Maine and Wisconsin storages tend to have concrete floors. While the Idaho storage costs were based on a 160,000 cwt storage, the budgets for Maine and Wisconsin represented 50,000 and 120,000 cwt storages, respectively.

Processing Potatoes

Interest on potato stocks and ownership costs accounted for the largest share of storage costs for processing potatoes. Weight losses and sizes and types of storage sheds account for most of the cost differences. Costs for the Red River Valley were based on a 48,000 cwt capacity shed versus a 160,000 cwt capacity shed for the Washington and Idaho areas. The Red River Valley storage

Table 8--Estimated storage costs for potatoes, selected regions, 1980 crop

| Cost item | Tablestock potatoes | | | Processing potatoes | |
|---|---|---|---|---|---|
| | Maine round white | Eastern Idaho russet | Central Wisconsin russet | Washington, Idaho russet | Red River Valley round white |
| | Dollars/cwt | | | | |
| Variable: | | | | | |
| Electricity | 0.063 | 0.044 | 0.066 | 0.030 | 0.071 |
| Cleaning | .006 | N.A. | .007 | N.A. | .007 |
| Repair and maintenance | .037 | .026 | .032 | .027 | .064 |
| Fuel and lube | .039 | .003 | .004 | .004 | .018 |
| Labor | .056 | .038 | .039 | .040 | .095 |
| Sprout inhibitor | N.A. | .042 | .042 | .043 | .080 |
| Insurance on crop | .012 | .012 | .010 | .010 | .011 |
| Interest on operating capital | .014 | .010 | .013 | .010 | .022 |
| Interest on potato stocks | .150 | .147 | .121 | .132 | .140 |
| Total variable 1/ | .377 | .322 | .333 | .295 | .507 |
| Ownership | .352 | .198 | .272 | .205 | .431 |
| Other: | | | | | |
| General overhead | .011 | .003 | .004 | .003 | .012 |
| Management charge | .074 | .052 | .061 | .050 | .095 |
| Total other 1/ | .084 | .056 | .065 | .054 | .107 |
| Total 1/ | .814 | .575 | .671 | .553 | 1.045 |

N.A. = Not applicable.

1/ Components may not add to totals because of rounding.

facilities also are typically built with concrete floors and bins, while storages in Washington and Idaho usually consist of lower cost open-shed structures with dirt floors. The Red River Valley cost was based on storing round white potatoes. These are held for processing into potato chips and are usually stored at higher temperatures than other potatoes, resulting in greater weight loss during storage and higher costs.

Packing and Selling

A single estimate was developed for packing and selling costs for both the central Wisconsin and eastern Idaho areas, which pack mostly russet potatoes. The packing and selling total includes costs for grading potatoes.

The total cost estimate for packing and selling potatoes in Maine was based on packing 1,200 cwt of potatoes per day for 87.5 days a year; the Idaho/Wisconsin estimate was based on packing 2,860 cwt per day for 180 days each year (table 9). 5/ The package mix (the percentage of potatoes in various package types and sizes) represented typical ones for each area.

Ownership and fuel costs for the Maine estimates were less per cwt because packing in Maine is typically done in the storage shed. The growers use a motorized scoop to move the potatoes from storage directly into the grading line. Hence, the Maine packing cost estimate does not include maintenance and ownership of the packinghouse nor transportation from the storage to the packingshed as does the Idaho/Wisconsin estimate. Costs for moving potatoes out of storage show up in Maine's storage cost estimate.

Total Costs

Total costs represent a sum of all costs, including charges for weight loss in storage, grading losses, and package overweight.

Fresh Potatoes

Total costs are determined for fresh potatoes at three points in the growing and harvesting, storage, and packing and selling sequence. Total growing and harvesting costs represent costs per cwt of potatoes into storage (table 6). Total costs f.o.b. the storage represent costs per cwt of potatoes out of storage, and total costs f.o.b. the packinghouse represent cost per cwt of potatoes marketed. Total costs f.o.b. the storage include a storage loss component reflecting the cost of weight loss during storage. Total costs f.o.b. the packing plant include charges for grading losses and package overweight. Grading loss represents the amount of cull potatoes picked out and sold to processors. The price for cull potatoes was set at $1.00 per cwt for Maine round whites and $2.50 per cwt for Idaho and Wisconsin russets. Package overweight represents the amount of additional potatoes placed in the retail and institutional packs to ensure they contain at least the stated amount at the time of final

5/ Several factors may lead to wide variations in packing cost estimates from those reported: volume of potatoes handled per day, number of days of operation per season, the mix of package types and sizes, and other.

Table 9--Estimated packing and selling costs for fresh potatoes, selected regions, 1980 crop

| Cost item | Maine | Idaho and Central Wisconsin |
|---|---|---|
| | Dollars/cwt | |
| Variable: | | |
| Electricity and water | 0.030 | 0.034 |
| Gas and oil | .035 | .090 |
| Labor | .509 | .489 |
| Packaging materials | .744 | .719 |
| Inspection | .033 | .040 |
| Repair and maintenance | .039 | .075 |
| Other supplies and services | .048 | .075 |
| Total variable 1/ | 1.438 | 1.523 |
| Ownership | .076 | .148 |
| Other: | | |
| General overhead | .017 | .014 |
| Management charge | .153 | .169 |
| Total other 1/ | .170 | .183 |
| Selling cost | .250 | .250 |
| Total 1/ | 1.934 | 2.104 |

1/ Components may not add to totals because of rounding.

sale. Overweight compensates for weight loss from packing to selling at retail (table 10).

Central Wisconsin's total cost, at $6.75 per cwt f.o.b. the packinghouse, was the lowest of the three fresh production areas studied, while eastern Idaho's cost was the highest at $7.77 per cwt (table 11).

Processing Potatoes

Total costs are determined for processing potatoes at two points in the production cycle: total costs per cwt into storage, and total cost per cwt out of storage. Washington's Columbia River basin shows the lowest total f.o.b. storage cost among the study area's processing potatoes with $3.69 per cwt; the highest costs occurred in the Minnesota/North Dakota Red River Valley with $4.91 per cwt. Red River Valley round white potatoes typically go to chipping use and are stored at higher temperatures than other potatoes, resulting in greater weight loss in storage than for other potatoes, and contributing to the high total cost.

Table 10--Estimated storage weight loss, grading loss, and package overweight, selected regions, 1980 crop

| Type of weight loss | Fresh | | Processing | |
|---|---|---|---|---|
| | Maine round white | Idaho, Wisconsin russet | Idaho, Washington russet | Red River Valley round white |
| | Percent | | | |
| Storage (percentage of total storage weight loss) | 5 | 5 | 8 | 12 |
| Grading (percentage of total weight out of storage) | 20 | 35 | N.A. | N.A. |
| Overweight (percentage of total fresh potatoes sold) | 5 | 5 | N.A. | N.A. |

N.A. = Not applicable.

## Costs Delivered to Major Markets

One way to evaluate the competitive position of different production areas is to compare total cost delivered to major markets. This comparison was made by adding transportation charges to the total costs f.o.b. the packinghouse. Transportation costs were based on weekly truck rates reported by the U.S. Department of Agriculture (USDA) (table 12).

Although shipping rates to New York City were reported only for Maine, Maine's shippers probably pay lower trucking rates to the close northeast cities than do the eastern Idaho or central Wisconsin shippers. Central Wisconsin enjoys a cost advantage over the other study areas in the southeastern and midwestern United States (table 13). Wisconsin's cost for delivering to Atlanta, Ga., was $9.41 per cwt, while the total cost for supplying Idaho russet potatoes to that city was $12.52. Wisconsin's cost advantage over Idaho widens in the Midwest. Total cost for Wisconsin russet potatoes delivered to Chicago amounted to only $7.81 per cwt, versus $11.37 per cwt for Idaho russets. For Dallas, Tex., only the truck rate for potatoes from Idaho was reported.

Prices received for potatoes also contribute to an area's competitive position. If potatoes in a high cost area bring a high average price, for example, that area may enjoy a competitive advantage over lower cost areas, even though production costs are high.

Table 11--Estimated total cost for potatoes f.o.b. the storage shed and f.o.b. the packinghouse, selected regions, 1980 crop

| Cost item | Fresh | | | Processing | | | |
|---|---|---|---|---|---|---|---|
| | Maine round white | Eastern Idaho russet | Central Wisconsin russet | Washington russet | Central Idaho russet | Western Idaho russet | Red River Valley round white |
| | | | | Dollars/cwt | | | |
| Growing and harvesting 1/ | 3.34 | 3.57 | 2.89 | 2.89 | 3.32 | 3.21 | 3.41 |
| Storage 2/ | .81 | .58 | .67 | .55 | .55 | .55 | 1.04 |
| Weight loss in storage 3/ | .18 | .19 | .15 | .25 | .29 | .28 | .46 |
| Total f.o.b. storage shed | 4.33 | 4.34 | 3.71 | 3.69 | 4.16 | 4.04 | 4.91 |
| Packing and selling 4/ | 1.93 | 2.10 | 2.10 | N.A. | N.A. | N.A. | N.A. |
| Grading loss and package overweights 5/ | 1.35 | 2.67 | 2.28 | N.A. | N.A. | N.A. | N.A. |
| Credit for grade-outs sold to processor 6/ | .25 | 1.34 | 1.34 | N.A. | N.A. | N.A. | N.A. |
| Total f.o.b. packinghouse | 7.36 | 7.77 | 6.75 | N.A. | N.A. | N.A. | N.A. |

N.A. = Not applicable.

1/ From tables 6 and 7.

2/ From table 8.

3/ Cost of weight loss in storage = (Growing and harvesting cost ) x $\left[\frac{1}{(1 - \text{percent weight loss in storage})} - 1\right]$.

4/ From table 9.

5/ Cost of grading loss and package overweight = (Total cost f.o.b. storage) x $\left[\frac{1}{(1 - \text{percent grading loss})} \times (1 + \text{percent package overweight}) - 1\right]$.

6/ Estimated as 0.25 cwt @ $1.00 per cwt for Maine round white potatoes and 0.538 cwt @ $2.50 per cwt for Idaho and Wisconsin russets.

Table 12--Average potato transportation costs between selected shipping and destination cities, 1980 crop

| Point of origin | Destination city | | | |
|---|---|---|---|---|
| | New York | Atlanta | Chicago | Dallas |
| | Dollars/40,000-pound load | | | |
| Maine | 968 | 1,496 | N.R. | N.R. |
| Idaho | N.R. | 1,902 | 1,441 | 1,497 |
| Wisconsin | N.R. | 1,064 | 425 | N.R. |

N.R. = Not reported.

Source: (1).

Table 13--Total cost of fresh potatoes delivered to selected cities, 1980 crop 1/

| Production area | Destination city | | | |
|---|---|---|---|---|
| | New York | Atlanta | Chicago | Dallas |
| | Dollars/cwt | | | |
| Maine round white | 9.78 | 11.10 | N.R. | N.R. |
| Idaho russet | N.R. | 12.52 | 11.37 | 11.26 |
| Wisconsin russet | N.R. | 9.41 | 7.81 | N.R. |

N.R. = Not reported.

1/ Costs estimated as total cost f.o.b. the packinghouse from table 11, plus estimates of transportation cost per cwt from table 12.

## COST ESTIMATES, 1981 SEASON

Cost estimates for potatoes grown and harvested during the summer and fall of 1981 and stored and marketed during the winter of 1982 were made by multiplying the components of the 1980 season costs times their respective indices of price changes during the 1980 and 1981 seasons.

### Growing and Harvesting

Growing and harvesting costs were estimated by multiplying the coefficients for rate of price change between 1980 and 1981 (table 14) times the 1980 estimates for each component (tables 6 and 7). The index of prices paid for seed understated changes in seed potato costs between 1980 and 1981; hence, the 1981 seed costs were based on prices reported by USDA in (3, April 15, 1981).

Table 14--Price indices for estimating potato growing and harvesting costs, 1981 and 1982

| Cost item | Index or rate | Rate of change | |
|---|---|---|---|
| | | 1980 to 1981 | 1981 to 1982 |
| | | Percent | |
| Preharvest variable: | | | |
| Seed | | 1/ | 1/ |
| Fertilizer | Fertilizer | 8.7 | 8.8 |
| Pesticide materials | Agricultural chemicals | 8.6 | 9.8 |
| Sprout inhibitor | Agricultural chemicals | 8.6 | 9.8 |
| Fuel and lube | Fuel and energy | 13.4 | 10.2 |
| Equipment repair | Machinery prices 2/ | 12.4 | 9.1 |
| Water charge | Farm services and rent | 10.1 | 8.2 |
| Irrigation power | Fuel and energy | 13.4 | 10.2 |
| Labor | Wage rates | 8.7 | 6.2 |
| Custom services | Farm services and rent | 10.1 | 8.2 |
| Interest rates | PCA interest 3/ | 13.1 | 4.1 |
| Harvest variable: | | | |
| Desiccant material | Agricultural chemicals | 8.6 | 9.8 |
| Fuel and lube | Fuel and energy | 13.4 | 10.2 |
| Equipment repair | Machinery prices 2/ | 12.4 | 9.1 |
| Labor | Wage rates | 8.7 | 6.2 |
| Custom services | Farm services and rent | 10.1 | 8.2 |
| Other: | | | |
| Ownership | Machinery prices 2/ | 12.4 | 9.1 |
| Land charge | Farm services and rent | 10.1 | 8.2 |
| General farm overhead | Consumer Price Index | 10.4 | 8.9 |
| Inspection, assessment, and dues | Farm services and rent | 10.1 | 8.2 |
| Management charge | 10 percent of other costs | N.A. | N.A. |

N.A. = Not applicable.

1/ Based on actual prices reported in (3), April 15, 1981.

2/ Simple average of indices for tractors and self-propelled machinery, other machinery, and autos and trucks.

3/ PCA is the Production Credit Association.

Source: Economic Research Service, USDA.

Fresh Potatoes

The biggest increase over 1980 costs was for seed (table 15). Maine's seed cost increased from $74.48 to $234.08 per acre; central Wisconsin maintained its lowest cost ranking among the fresh potato areas studied. Maine's projected growing costs for 1981 increased proportionately more than those for other areas and surpassed eastern Idaho as the high cost area. Unusually low seed costs during 1980 and the large seed price increase in Maine for 1981 boosted Maine's estimated cost more than that of eastern Idaho's. The 1981 costs represented increases of 32 percent for Maine, 19 percent for eastern Idaho, and 23 percent for central Wisconsin over 1980.

Processing Potatoes

As with the fresh potato cost estimates, the seed component of processing potato costs increased dramatically between 1980 and 1981 (table 16). The Red River Valley's total cost showed the largest percentage increase. Seed and fuel expenses there accounted for a larger share of total cost than in the other areas, and the price increases for these two cost components were larger than any other component. Total cost for the Red River Valley increased by a projected 29 percent between 1980 and 1981, 20 percent in Washington, 19 percent in central Idaho, and 17 percent in southwestern Idaho.

Storage

The 1981 storage cost estimates were derived by multiplying the rate of change in price indices between 1980 and 1981 times respective components of the 1980 season storage cost. The coefficients for rates of price change between 1980 and 1981 (table 17) were multiplied times the cost components from table 8 to arrive at the 1981 season cost estimates.

Estimated total costs for storing fresh potatoes during 1981 showed increases between 14 and 17 percent over 1980 (table 18). The lowest cost for storing fresh potatoes occurred in eastern Idaho, the highest in Maine.

Packing and Selling

Table 19 lists the coefficients for rate of change in cost components between 1981 and 1982. Estimates for potato packing costs during the winter of 1982 are shown in table 20. Total packing cost came to about 8 percent higher than year-earlier estimates.

Total Costs

Total costs were developed using the same storage loss, grade out loss, and overweight factors used for the 1980 costs in table 9.

Fresh Potatoes

Estimated total costs for fresh potatoes f.o.b. the packinghouse increased 18 to 25 percent between the 1980 and 1981 seasons, with Maine showing the greatest increase (table 21). The major component of that cost increase was in growing and harvesting, which increased 32 percent between the 2 years due in large part to seed cost increases.

Processing Potatoes

Estimated costs for processing potatoes rose between 17 and 25 percent for the areas studied. The greatest increase occurred in the Red River Valley, where high seed cost and fuel cost increases raised the growing and harvesting component of total cost 29 percent over the 1980 season.

Table 15--Estimated fresh potato growing and harvesting costs, selected regions, 1981

| Cost item | Cost per acre | | | Cost per cwt | | |
|---|---|---|---|---|---|---|
| | Maine round white | Eastern Idaho russet | Central Wisconsin russet | Maine round white | Eastern Idaho russet | Central Wisconsin russet |
| | Dollars | | | | | |
| Preharvest variable: | | | | | | |
| Seed | 234.08 | 173.40 | 216.00 | 0.94 | 0.69 | 0.62 |
| Fertilizer | 159.53 | 132.51 | 168.49 | .64 | .53 | .48 |
| Pesticide material | 116.28 | 73.03 | 117.29 | .47 | .29 | .34 |
| Sprout inhibitor | N.A. | N.A. | 9.77 | N.A. | N.A. | .03 |
| Fuel and lube | 26.37 | 21.70 | 24.98 | .11 | .09 | .07 |
| Equipment repair | 25.32 | 16.24 | 26.12 | .10 | .06 | .07 |
| Water charge | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Irrigation power | N.A. | 85.05 | 56.70 | N.A. | .34 | .16 |
| Labor | 27.01 | 22.16 | 31.19 | .11 | .09 | .09 |
| Custom services | N.A. | 21.47 | 2.75 | N.A. | .09 | .01 |
| Interest | 42.27 | 39.18 | 46.92 | .17 | .16 | .13 |
| Preharvest total 1/ | 630.86 | 584.74 | 700.21 | 2.52 | 2.34 | 2.00 |
| Harvest variable: | | | | | | |
| Desiccant material | 13.37 | 5.32 | 8.56 | .05 | .02 | .02 |
| Fuel and lube | 36.32 | 23.30 | 35.27 | .15 | .09 | .10 |
| Equipment repair | 35.28 | 22.13 | 31.28 | .14 | .09 | .09 |
| Labor | 66.84 | 36.65 | 42.46 | .27 | .15 | .12 |
| Custom services | N.A. | 4.95 | N.A. | N.A. | .02 | N.A. |
| Harvest total | 151.81 | 92.35 | 117.57 | .61 | .37 | .34 |
| Total variable 1/ | 782.67 | 677.09 | 817.78 | 3.13 | 2.71 | 2.34 |
| Ownership | 154.53 | 98.59 | 135.39 | .62 | .39 | .39 |
| Other: | | | | | | |
| Land charge | 44.04 | 165.15 | 165.15 | .18 | .66 | .47 |
| General farm overhead | 22.08 | 22.08 | 22.08 | .09 | .09 | .06 |
| Inspection, assessment, and dues | 4.53 | 19.01 | 6.94 | .02 | .08 | .02 |
| Management charge | 96.38 | 81.68 | 98.22 | .39 | .33 | .28 |
| Total other 1/ | 167.03 | 287.92 | 292.39 | .67 | 1.15 | .84 |
| Total 1/ | 1,104.23 | 1,063.60 | 1,245.56 | 4.42 | 4.25 | 3.56 |

N.A. = Not applicable.
1/ Components may not add to totals because of rounding.

Table 16--Estimated processing potato growing and harvesting costs, selected regions, 1981

| Cost item | Cost per acre | | | | Cost per cwt | | | |
|---|---|---|---|---|---|---|---|---|
| | Washington russet | Central Idaho russet | Western Idaho russet | Red River Valley round white | Washington russet | Central Idaho russet | Western Idaho russet | Red River Valley round white |
| | Dollars | | | | | | | |
| Preharvest variable: | | | | | | | | |
| Seed | 283.00 | 194.85 | 192.28 | 151.20 | 0.62 | 0.67 | 0.56 | 1.01 |
| Fertilizer | 239.87 | 143.76 | 165.70 | 46.50 | .52 | .50 | .48 | .31 |
| Pesticide material | 194.47 | 77.11 | 108.98 | 48.01 | .42 | .27 | .32 | .32 |
| Sprout inhibitor | 3.23 | N.A. | N.A. | 9.77 | .01 | N.A. | N.A. | .07 |
| Fuel and lube | 23.08 | 19.54 | 24.83 | 17.03 | .05 | .07 | .07 | .11 |
| Equipment repair | 15.05 | 15.01 | 17.39 | 14.41 | .03 | .05 | .05 | .10 |
| Water charge | 22.02 | N.A. | N.A. | N.A. | .05 | N.A. | N.A. | N.A. |
| Irrigation power | 22.68 | 85.05 | 28.35 | N.A. | .05 | .29 | .08 | N.A. |
| Labor | 21.58 | 19.96 | 37.71 | 13.32 | .05 | .07 | .11 | .09 |
| Custom services | 53.73 | 31.38 | 44.04 | N.A. | .12 | .11 | .13 | N.A. |
| Interest | 63.11 | 42.13 | 44.48 | 21.56 | .14 | .15 | .13 | .14 |
| Preharvest total 1/ | 941.82 | 628.79 | 663.76 | 321.80 | 2.05 | 2.17 | 1.94 | 2.15 |
| Harvest variable: | | | | | | | | |
| Desiccant material | 12.22 | 2.66 | N.A. | 6.52 | .03 | .01 | N.A. | .04 |
| Fuel and lube | 28.42 | 25.49 | 29.38 | 22.92 | .06 | .09 | .09 | .15 |
| Equipment repair | 26.95 | 23.64 | 26.71 | 22.02 | .06 | .08 | .08 | .15 |
| Labor | 44.87 | 35.79 | 40.62 | 34.27 | .10 | .12 | .12 | .23 |
| Custom services | 6.06 | 7.16 | N.A. | N.A. | .01 | .02 | N.A. | N.A. |
| Harvest total 1/ | 118.52 | 94.74 | 96.71 | 85.73 | .26 | .33 | .28 | .57 |
| Total variable 1/ | 1,060.34 | 723.53 | 760.47 | 407.53 | 2.31 | 2.49 | 2.22 | 2.72 |
| Ownership | 103.31 | 96.54 | 111.11 | 86.38 | .22 | .33 | .32 | .58 |
| Other: | | | | | | | | |
| Land charge | 247.73 | 192.68 | 275.25 | 88.08 | .54 | .66 | .80 | .59 |
| General farm overhead | 22.08 | 22.08 | 22.08 | 22.08 | .05 | .08 | .06 | .15 |
| Inspection, assessment, and dues | 40.52 | 21.36 | 24.40 | 4.95 | .09 | .07 | .07 | .03 |
| Management charge | 122.63 | 86.35 | 91.81 | 52.09 | .27 | .30 | .27 | .35 |
| Total other 1/ | 432,96 | 322.47 | 413.54 | 167.20 | .94 | 1.11 | 1.21 | 1.12 |
| Total per acre 1/ | 1,596.61 | 1,142.54 | 1,285.12 | 661.11 | 3.47 | 3.94 | 3.76 | 4.41 |

N.A. = Not applicable.

1/ Components may not add to totals because of rounding.

Table 17--Price indices for estimating potato storage costs, 1981 and 1982

| Cost item | Index or rate | Rate of change | |
|---|---|---|---|
| | | 1980 to 1981 | 1981 to 1982 |
| | | Percent | |
| Variable: | | | |
| Electricity | Fuel and energy | 13.4 | 10.2 |
| Cleaning | Farm services and rent | 10.1 | 8.2 |
| Repair and maintenance | Machinery prices | 12.4 | 9.1 |
| Fuel and lube | Fuel and energy | 13.4 | 10.2 |
| Labor | Wage rates | 8.7 | 6.2 |
| Sprout inhibitor | Agricultural chemicals | 8.6 | 9.8 |
| Insurance on crop | Rate of change in total variable growing cost | N.A. | N.A. |
| Interest rate | PCA interest | 13.1 | 4.1 |
| Ownership | 92 percent of buildings and fencing<br>8 percent other machinery | 6.0 | 7.2 |
| Other: | | | |
| General overhead | Consumer Price Index | 10.4 | 8.9 |
| Management charge | 10 percent of other costs | N.A. | N.A. |

N.A. = Not applicable.

Source: Economic Research Service, USDA.

Table 18--Estimated potato storage costs, selected U.S. production area, 1981

| Cost item | Tablestock potatoes | | | Processing potatoes | |
|---|---|---|---|---|---|
| | Maine round white | Eastern Idaho russet | Central Wisconsin russet | Washington, Idaho russet | Red River Valley round white |
| | | | Dollars/cwt | | |
| Variable: | | | | | |
| Electricity | 0.071 | 0.050 | 0.075 | 0.034 | 0.081 |
| Cleaning | .007 | N.A. | .008 | N.A. | .008 |
| Repair and maintenance | .042 | .029 | .036 | .030 | .072 |
| Fuel and lube | .044 | .003 | .005 | .005 | .020 |
| Labor | .061 | .041 | .042 | .043 | .103 |
| Sprout inhibitor | N.A. | .046 | .046 | .047 | .087 |
| Insurance on crop | .016 | .014 | .012 | .012 | .014 |
| Interest on operating capital | .017 | .013 | .016 | .012 | .028 |
| Interest on potato stocks | .225 | .195 | .168 | .166 | .195 |
| Total variable 1/ | .483 | .391 | .408 | .349 | .608 |
| Ownership | .373 | .210 | .288 | .217 | .457 |
| Other: | | | | | |
| General overhead | .012 | .003 | .004 | .003 | .013 |
| Management charge | .087 | .060 | .070 | .057 | .108 |
| Total other 1/ | .099 | .063 | .074 | .060 | .121 |
| Total 1/ | .955 | .644 | .770 | .626 | 1.186 |

N.A. = Not applicable.

Table 19--Price indices for estimating potato packing and selling costs, 1981 and 1982 crops

| Cost item | Index or rate | Rate of change 1980 to 1981 | Rate of change 1981 to 1982 |
|---|---|---|---|
| | | Percent | |
| Variable: | | | |
| Electricity and water | Fuel and energy | 10.2 | 9.0 |
| Gas and oil | Fuel and energy | 10.2 | 9.0 |
| Labor | Wage rates | 6.2 | 7.0 |
| Packaging material | Consumer Price Index | 8.9 | 7.3 |
| Inspection | Farm services and rent | 8.2 | 7.9 |
| Repair and maintenance | Other machinery | 9.1 | 9.6 |
| Other supplies and services | Farm services and rent | 8.2 | 7.9 |
| Ownership | 0.86 other machinery .14 building and fencing | 8.8 | 9.2 |
| Other: | | | |
| General overhead | Consumer Price Index | 8.9 | 7.3 |
| Management charge | 10 percent of other costs | | |
| Selling | Farm services and rent | 8.2 | 7.9 |

Source: Economic Research Service, USDA.

Table 20--Estimated packing and selling costs for fresh potatoes, selected regions, 1981 crop

| Cost item | Maine | Idaho and central Wisconsin |
|---|---|---|
| | Dollars/cwt | |
| Variable: | | |
| Electricity and water | 0.033 | 0.037 |
| Gas and oil | .039 | .099 |
| Labor | .541 | .519 |
| Packaging material | .810 | .783 |
| Inspection | .036 | .043 |
| Repair and maintenance | .043 | .082 |
| Other supplies and services | .052 | .081 |
| Total variable 1/ | 1.554 | 1.644 |
| Ownership | .083 | .161 |
| Other: | | |
| General overhead | .019 | .015 |
| Management charge | .166 | .182 |
| Total other 1/ | .185 | .197 |
| Selling | .271 | .271 |
| Total 1/ | 2.093 | 2.273 |

1/ Components may not add to totals because of rounding.

Table 21--Estimated total cost for potatoes f.o.b. storage shed and f.o.b. the packinghouse, selected regions, 1981 crop

| Cost item | Fresh | | | Processing | | | |
|---|---|---|---|---|---|---|---|
| | Maine round white | Eastern Idaho russet | Central Wisconsin russet | Washington round white | Central Idaho russet | Western Idaho russet | Red River Valley round white |
| | | | | Dollars/cwt | | | |
| Growing and harvesting 1/ | 4.42 | 4.25 | 3.56 | 3.47 | 3.94 | 3.76 | 4.41 |
| Storage 2/ | .96 | .66 | .77 | .63 | .63 | .63 | 1.19 |
| Weight loss in storage 3/ | .23 | .22 | .19 | .30 | .34 | .33 | .60 |
| Total f.o.b. storage | 5.61 | 5.13 | 4.52 | 4.40 | 4.91 | 4.72 | 6.20 |
| Packing and selling 4/ | 2.09 | 2.27 | 2.27 | N.A. | N.A. | N.A. | N.A. |
| Grading loss and package overweights 5/ | 1.75 | 3.16 | 2.78 | N.A. | N.A. | N.A. | N.A. |
| Credit for grade-outs sold to processor 6/ | .25 | 1.34 | 1.34 | N.A. | N.A. | N.A. | N.A. |
| Total f.o.b. packinghouse | 9.20 | 9.22 | 8.23 | N.A. | N.A. | N.A. | N.A. |

N.A. = Not applicable.

1/ From tables 15 and 16.

2/ From table 18.

3/ Cost of weight loss in storage = (Growing and harvesting cost) x $\left[\frac{1}{(1 - \text{percent weight loss in storage})} - 1\right]$.

4/ From table 20.

5/ Cost of grading loss and package overweight = Total cost f.o.b. storage) x $\left[\frac{1}{(1 - \text{percent grading loss})} \times (1 + \text{percent package overweight}) - 1\right]$.

6/ Estimated as 0.25 cwt @ $1.00 per cwt for Maine round white potatoes and 0.538 cwt @ $2.50 per cwt for Idaho and Wisconsin russets.

COST PROJECTIONS, 1982 SEASON

Cost projections for potatoes grown and harvested during the summer and fall of 1982 and stored and marketed in the winter of 1983 were made by multiplying the components of 1981 season costs times their respective price indices of projected changes occurring between the 1981 and 1982 seasons.

Growing and Harvesting

The index of prices paid for seed did not reflect changes in seed potato prices between 1980 and 1981, and appeared not to reflect accurately the change in seed potato prices likely between 1981 and 1982. An unusually small crop of seed potatoes during 1980 caused very high seed prices during the spring of 1981. Prices for seed potatoes for the spring of 1982 were not reported at the time this analysis was completed, but the supply of seed potatoes from the 1981 crop indicated a price between the unusual low of 1980 and the unusual high of 1981. Hence, seed prices for 1982 were projected midway between 1980 and 1981 estimates.

Fresh Potatoes

Lower seed costs offset price increases in other production costs giving 1982 projections for variable costs nearly the same as for 1981 (table 22). Projected ownership costs and land charge increases between 1981 and 1982 raised the projected total cost for growing and harvesting in 1982 by 3.5 percent in eastern Idaho, and 1.7 percent in central Wisconsin. The reduced seed costs in Maine overcame the higher ownership and land charges, dropping projected 1982 costs 1.8 percent below the 1981 cost estimates.

Processing Potatoes

Lower projected seed costs for 1982 offset much of the increase in other components of costs for growing and harvesting processing potatoes. Projected costs for Washington increased 2.5 percent from $1,596.61 per acre to $1,637.06, or from $3.47 to $3.56 per cwt (table 23). Projected costs for south-central and western Idaho increased 3.3 and 4.0 percent, respectively, between 1981 and 1982. In the Red River Valley, seed costs accounted for a large share of total costs, and the lower projected seed costs for that area more than offset increases in the other components, giving a cost projection lower for 1982 than for 1981.

Storage

Rates of price change between 1981 and 1982 (table 17) were multiplied times the 1981 storage cost components from table 18 to arrive at the 1982 season projections.

Fresh Potatoes

Projected fresh potato storage costs for the 1982 season ran 5 to 7 percent higher than 1981 season estimates (table 24). Interest and insurance on potato stocks had a moderating effect on the projected cost increase between 1981 and 1982. Maine showed the highest total projected storage cost for 1982 at 5.4 percent above the 1981 estimate.

Processing Potatoes

Projected total storage costs for potatoes for processing during the 1982 season in the Washington and Idaho regions were 7.7 percent above the 1981 estimate, and 6 percent above the 1981 season estimate in the Red River Valley.

Table 22--Projected growing and harvesting costs for tablestock potatoes, selected regions, 1982

| Cost item | Cost per acre | | | Cost per cwt | | |
|---|---|---|---|---|---|---|
| | Maine round white | Eastern Idaho russet | Central Wisconsin russet | Maine round white | Eastern Idaho russet | Central Wisconsin russet |
| | | | | Dollars | | |
| Preharvest variable: | | | | | | |
| Seed | 154.28 | 137.70 | 157.50 | 0.62 | 0.55 | 0.45 |
| Fertilizer | 173.57 | 144.17 | 183.32 | .69 | .58 | .52 |
| Pesticide material | 127.68 | 80.19 | 128.78 | .51 | .32 | .37 |
| Sprout inhibitor | N.A. | N.A. | 10.73 | N.A. | N.A. | .03 |
| Fuel and lube | 29.06 | 23.91 | 27.53 | .12 | .10 | .08 |
| Equipment repair | 27.62 | 17.72 | 28.50 | .11 | .07 | .08 |
| Water charge | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Irrigation power | N.A. | 93.73 | 62.48 | N.A. | .38 | .18 |
| Labor | 28.68 | 23.53 | 33.12 | .11 | .09 | .09 |
| Custom services | N.A. | 23.23 | 2.98 | N.A. | .09 | .01 |
| Interest | 40.44 | 40.68 | 47.47 | .16 | .16 | .14 |
| Preharvest total 1/ | 581.33 | 584.86 | 682.41 | 2.32 | 2.34 | 1.95 |
| Harvest variable: | | | | | | |
| Desiccant material | 14.68 | 5.84 | 9.40 | .06 | .02 | .03 |
| Fuel and lube | 40.02 | 25.68 | 38.87 | .16 | .10 | .11 |
| Equipment repair | 38.49 | 24.14 | 34.13 | .15 | .10 | .10 |
| Labor | 70.98 | 38.92 | 45.09 | .28 | .16 | .13 |
| Custom services | N.A. | 5.36 | N.A. | N.A. | .02 | N.A. |
| Harvest total | 164.17 | 99.94 | 127.49 | .66 | .40 | .36 |
| Total variable 1/ | 745.50 | 684.80 | 809.90 | 2.98 | 2.74 | 2.31 |
| Ownership | 168.59 | 107.56 | 147.71 | .67 | .43 | .42 |
| Other: | | | | | | |
| Land charge | 47.65 | 178.69 | 178.69 | .19 | .71 | .51 |
| General farm overhead | 24.05 | 24.05 | 24.05 | .10 | .10 | .07 |
| Inspection, assessment, and dues | 4.90 | 20.57 | 7.51 | .02 | .08 | .02 |
| Management charge | 94.30 | 83.70 | 98.92 | .38 | .33 | .28 |
| Total other 1/ | 170.90 | 307.01 | 309.17 | .68 | 1.23 | .88 |
| Total 1/ | 1,084.99 | 1,099.37 | 1,266.78 | 4.34 | 4.40 | 3.62 |

N.A. = Not applicable.
1/ Components may not add to totals because of rounding.

Table 23--Projected processing potato growing and harvesting costs, selected regions, 1982

| Cost item | Cost per acre | | | | Cost per cwt | | | |
|---|---|---|---|---|---|---|---|---|
| | Washington russet | Central Idaho russet | Western Idaho russet | Red River Valley round white | Washington russet | Central Idaho russet | Western Idaho russet | Red River Valley round white |
| | Dollars | | | | | | | |
| Preharvest variable: | | | | | | | | |
| Seed | 220.74 | 156.96 | 156.86 | 108.00 | 0.48 | 0.54 | 0.46 | 0.72 |
| Fertilizer | 260.98 | 156.41 | 180.28 | 50.59 | .57 | .54 | .53 | .34 |
| Pesticide material | 213.53 | 84.67 | 119.66 | 52.72 | .46 | .29 | .35 | .35 |
| Sprout inhibitor | 3.55 | N.A. | N.A. | 10.73 | .01 | N.A. | N.A. | .07 |
| Fuel and lube | 25.43 | 21.53 | 27.36 | 18.77 | .06 | .07 | .08 | .13 |
| Equipment repair | 16.42 | 16.38 | 18.97 | 15.72 | .04 | .06 | .06 | .10 |
| Water charge | 23.83 | N.A. | N.A. | N.A. | .05 | N.A. | N.A. | N.A. |
| Irrigation power | 24.99 | 93.73 | 31.24 | N.A. | .05 | .32 | .09 | N.A. |
| Labor | 22.92 | 21.20 | 40.05 | 14.15 | .05 | .07 | .12 | .09 |
| Custom services | 58.14 | 33.95 | 47.65 | N.A. | .13 | .12 | .14 | N.A. |
| Interest | 65.08 | 43.72 | 46.51 | 20.24 | .14 | .15 | .14 | .13 |
| Preharvest total 1/ | 935.61 | 628.55 | 668.55 | 290.92 | 2.03 | 2.17 | 1.95 | 1.94 |
| Harvest variable: | | | | | | | | |
| Desiccant material | 13.42 | 2.92 | N.A. | 7.16 | .03 | .01 | N.A. | .05 |
| Fuel and lube | 31.32 | 28.09 | 32.38 | 25.26 | .07 | .10 | .09 | .17 |
| Equipment repair | 29.40 | 25.79 | 29.14 | 24.02 | .06 | .09 | .09 | .16 |
| Labor | 47.65 | 38.01 | 43.14 | 36.39 | .10 | .13 | .13 | .24 |
| Custom services | 6.56 | 7.75 | N.A. | N.A. | .01 | .03 | N.A. | N.A. |
| Harvest total 1/ | 128.35 | 102.56 | 104.66 | 92.83 | .28 | .35 | .31 | .62 |
| Total variable 1/ | 1,063.96 | 731.11 | 773.24 | 383.75 | 2.31 | 2.52 | 2.26 | 2.56 |
| Ownership | 112.71 | 105.33 | 121.22 | 94.24 | .25 | .36 | .35 | .63 |
| Other: | | | | | | | | |
| Land charge | 268.04 | 208.48 | 297.82 | 95.30 | .58 | .72 | .87 | .64 |
| General farm overhead | 24.05 | 24.05 | 24.05 | 24.05 | .05 | .08 | .07 | .16 |
| Inspection, assessment, and dues | 43.84 | 23.11 | 26.40 | 5.36 | .10 | .08 | .08 | .04 |
| Management charge | 124.46 | 88.36 | 94.49 | 50.74 | .27 | .30 | .28 | .34 |
| Total other 1/ | 460.39 | 344.00 | 442.76 | 175.45 | 1.00 | 1.19 | 1.29 | 1.17 |
| Total 1/ | 1,637.06 | 1,180.44 | 1,337.22 | 653.44 | 3.56 | 4.07 | 3.91 | 4.36 |

N.A. = Not applicable.

1/ Components may not add to totals because of rounding.

Table 24--Projected potato storage costs, selected regions, 1982

| Cost item | Tablestock potatoes | | | Processing potatoes | |
|---|---|---|---|---|---|
| | Maine round white | Eastern Idaho russet | Central Wisconsin russet | Idaho, Washington russet | Red River Valley round white |
| | | | Dollars/cwt | | |
| Variable: | | | | | |
| Electricity | 0.078 | 0.055 | 0.083 | 0.037 | 0.089 |
| Cleaning | .008 | N.A. | .009 | N.A. | .009 |
| Repair and maintenance | .046 | .032 | .039 | .033 | .079 |
| Fuel and lube | .048 | .003 | .006 | .006 | .022 |
| Labor | .065 | .044 | .045 | .046 | .109 |
| Sprout inhibitor | N.A. | .051 | .051 | .052 | .096 |
| Insurance on crop | .015 | .014 | .012 | .012 | .013 |
| Interest on operating capital | .019 | .015 | .018 | .014 | .031 |
| Interest on potato stocks | .223 | .205 | .173 | .177 | .191 |
| Total variable 1/ | .502 | .419 | .436 | .377 | .639 |
| Ownership | .400 | .225 | .309 | .233 | .490 |
| Other: | | | | | |
| General overhead | .013 | .003 | .004 | .003 | .014 |
| Management charge | .092 | .065 | .075 | .061 | .114 |
| Total other 1/ | .105 | .068 | .079 | .064 | .128 |
| Total 1/ | 1.007 | .712 | .824 | .674 | 1.257 |

N.A. = Not applicable.

Packing and Selling — Total costs for packing and selling for the 1982 potato crop amounted to $2.25 per cwt for Maine and $2.45 per cwt for Wisconsin and eastern Idaho, an increase of about 7.5 percent over estimated 1981 season costs (table 25).

Total Costs — Total cost projections were developed with the percentage storage loss, grade-out loss, and overweight factors used for the two previous seasons (table 26).

Fresh Potatoes — Projected total costs for fresh potatoes f.o.b. the packinghouse increased 1.3 to 5.4 percent between the 1981 and 1982 seasons. Maine's cost showed the smallest increase. A decrease in projected growing and harvesting costs offset much of the cost increase in storage and packing, resulting in a relatively moderate increase.

Table 25--Projected packing and selling costs for fresh potatoes, selected regions, 1982 crop

| Cost item | Maine | Idaho and Central Wisconsin |
|---|---|---|
| | Dollars/cwt | |
| Variable: | | |
| Electricity | 0.036 | 0.040 |
| Gas and oil | .043 | .108 |
| Labor | .579 | .555 |
| Packaging materials | .869 | .840 |
| Inspection | .039 | .046 |
| Repair and maintenance | .047 | .090 |
| Other supplies and services | .056 | .087 |
| Total variable 1/ | 1.669 | 1.766 |
| Ownership | .091 | .176 |
| Other: | | |
| General overhead | .020 | .016 |
| Management charge | .178 | .196 |
| Total other 1/ | .198 | .212 |
| Selling | .292 | .292 |
| Total 1/ | 2.250 | 2.446 |

1/ Components may not add to totals because of rounding.

Processing Potatoes

Projected total costs for processing potatoes rose between 0.2 percent and 4.2 percent between 1981 and 1982 for the processing potato areas studied. The smallest increase occurred in the Red River Valley where a reduction in growing and harvesting cost offset increases in the storage cost. The largest total cost increase occurred in western Idaho.

Table 26--Projected total cost for potatoes f.o.b. the storage shed and f.o.b. the packinghouse, selected regions, 1982 crop

| Cost item | Fresh | | | Processing | | | |
|---|---|---|---|---|---|---|---|
| | Maine round white | Eastern Idaho russet | Central Wisconsin russet | Washington russet | Central Idaho russet | Western Idaho russet | Red River Valley round white |
| | | | | Dollars/cwt | | | |
| Growing and harvesting 1/ | 4.34 | 4.40 | 3.62 | 3.56 | 4.07 | 3.91 | 4.36 |
| Storage 2/ | 1.01 | .71 | .82 | .67 | .67 | .67 | 1.26 |
| Weight loss in storage 3/ | .23 | .23 | .19 | .31 | .35 | .34 | .59 |
| Total f.o.b. storage | 5.58 | 5.34 | 4.63 | 4.54 | 5.09 | 4.92 | 6.21 |
| Packing and selling 4/ | 2.25 | 2.45 | 2.45 | N.A. | N.A. | N.A. | N.A. |
| Grading loss and package overweights 5/ | 1.74 | 3.29 | 2.85 | N.A. | N.A. | N.A. | N.A. |
| Credit for grade-outs sold to processor 6/ | .25 | 1.34 | 1.34 | N.A. | N.A. | N.A. | N.A. |
| Total f.o.b. packinghouse | 9.32 | 9.74 | 8.59 | N.A. | N.A. | N.A. | N.A. |

N.A. = Not applicable.

1/ From tables 15 and 16.

2/ From table 18.

3/ Cost of weight loss in storage = (Growing and harvesting cost) x $\left[ \frac{1}{(1 - \text{percent weight loss in storage})} - 1 \right]$.

4/ From table 20.

5/ Cost of grading loss and package overweight = (Total cost f.o.b. storage) x $\left[ \frac{1}{(1 - \text{percent grading loss})} \times (1 - \text{percent package overweight}) - 1 \right]$.

6/ Estimated as 0.25 cwt @ $1.00 per cwt for Maine round white potatoes and 0.538 cwt @ $2.50 per cwt for Idaho and Wisconsin russets.

REFERENCES

(1) Agricultural Marketing Service, U.S. Dept. Agr. Fruit and Vegetable Truck Rate Report. Various issues, 1980 and 1981.

(2) American Society of Agricultural Engineers. Agricultural Engineers Yearbook-1977. St. Joseph, Mich., 1977.

(3) Economics, Statistics, and Cooperatives Service, U.S. Dept. Agr. Agricultural Prices. Various issues.

(4) _____, U.S. Dept. Agr. Farm Labor. May 1980.

(5) _____, U.S. Dept. Agr. Potatoes and Sweetpotatoes. August 24, 1979.

(6) Economics and Statistics Service, U.S. Dept. Agr. Potato Facts. Spring, 1981.

(7) Johnston, Edward F. Economies of Size for Maine Potato Packing Plants. Life Sciences and Agricultural Experiment Station Bulletin 746, Univ. Maine, December 1977.

## APPENDIX A-- GROWING AND HARVESTING COSTS

The budgets represent costs for seven situations: fresh potato production in Maine, central Wisconsin, and eastern Idaho, and processing potato production in Washington, south-central Idaho, southwestern Idaho, and the Minnesota/North Dakota Red River Valley. Note that the same equipment costs apply to all three Idaho areas, so that there are no separate equipment cost tables shown for south-central or southwest Idaho.

Appendix table 1--Round white tablestock potatoes: Estimated costs for growing and harvesting in Aroostook County, Maine, 1980

| Cost item | Unit | Quantity per acre | Price or cost per unit | Cost per acre | Cost per cwt |
|---|---|---|---|---|---|
| | | | ----------Dollars---------- | | |
| Yield | Cwt | 250 | N.A. | N.A. | N.A. |
| Variable: | | | | | |
| Preharvest-- | | | | | |
| Seed | do. | 21.28 | 3.50 | 74.48 | 0.30 |
| Nitrogen | Lbs. | 157 | 0.375 | 58.88 | .24 |
| Phosphorus | do. | 193 | .285 | 55.00 | .22 |
| Potassium | do. | 209 | .125 | 26.12 | .10 |
| Lime | Ton | .35 | 19.30 | 6.76 | .03 |
| Fungicide (Mancozeb) | Lbs. | 15 | 1.65 | 24.75 | .10 |
| Herbicide (Metribuzin) | Gal. | .25 | 74.00 | 18.50 | .07 |
| Insecticide: | | | | | |
| Disulfoton | Lbs. | 15 | .84 | 12.60 | .05 |
| Azinphos methyl | Pct. | 1 | 2.20 | 2.20 | .01 |
| Demeton | do. | 1 | 6.40 | 6.40 | .03 |
| Methamidophos | do. | 1.5 | 5.00 | 7.50 | .03 |
| Seed treatment | Lbs. | 21.28 | 1.65 | 35.12 | .14 |
| Tractor fuel and lube | Acre | 1 | 13.55 | 13.55 | .05 |
| Tractor repair | do. | 1 | 4.84 | 4.84 | .02 |
| Machinery fuel and lube | do. | 1 | 9.70 | 9.70 | .04 |
| Machinery repair | do. | 1 | 17.69 | 17.69 | .07 |
| Operator labor | Hrs. | 3.86 | 4.31 | 16.64 | .07 |
| Other labor | do. | 2.30 | 3.57 | 8.21 | .03 |
| Interest on operating capital (12.7 percent of preharvest variable cost for 6 months) | N.A. | N.A. | N.A. | 25.33 | .10 |
| Total preharvest 1/ | N.A. | N.A. | N.A. | 424.27 | 1.70 |
| Harvest-- | | | | | |
| Desiccant (DNBP) | Gal. | .75 | 9.75 | 7.31 | .03 |
| Fuel oil | do. | 5 | 1.00 | 5.00 | .02 |
| Tractor fuel and lube | Acre | 1 | 10.62 | 10.62 | .04 |
| Tractor repair | do. | 1 | 3.48 | 3.48 | .01 |
| Machinery fuel and lube | do. | 1 | 21.41 | 21.41 | .09 |
| Machinery repair | do. | 1 | 27.91 | 27.91 | .11 |
| Operator labor | Hr. | 4.17 | 4.31 | 17.97 | .07 |
| Other labor | do. | 12.19 | 3.57 | 43.52 | .17 |
| Total harvest | N.A. | N.A. | N.A. | 137.22 | .55 |
| Total variable | N.A. | N.A. | N.A. | 561.49 | 2.25 |

See footnotes at end of table.

Continued--

Appendix table 1--Round white tablestock potatoes: Estimated costs for growing and harvesting in Aroostook County, Maine, 1980--Continued

| Cost item | Unit | Quantity per acre | Price or cost per unit | Cost per acre | Cost per cwt |
|---|---|---|---|---|---|
| | | | ----------Dollars---------- | | |
| Ownership (replacement taxes, insurance, interest): | | | | | |
| Tractors | Acre | 1 | 29.07 | 29.07 | 0.12 |
| Machinery | do. | 1 | 108.41 | 108.41 | .43 |
| Total ownership 1/ | N.A. | N.A. | N.A. | 137.48 | .55 |
| Other: | | | | | |
| Land charge (cash rent) | Acre | 1 | 40.00 | 40.00 | .16 |
| General farm overhead 2/ | do. | 1 | 20.00 | 20.00 | .08 |
| Potato promotion tax (2-1/4 cents on 73 percent of production) 3/ | do. | 1 | 4.11 | 4.11 | .02 |
| Management charge 4/ | do. | 1 | N.A. | 72.31 | .29 |
| Total other 1/ | N.A. | N.A. | N.A. | 136.42 | .55 |
| Total 1/ | N.A. | N.A. | N.A. | 835.39 | 3.34 |

N.A. = Not applicable.

1/ Components may not add to totals because of rounding.

2/ Includes telephone, legal, accounting, and other farm expenses not charged directly to potatoes.

3/ Includes 1-1/4 cent/cwt state assessment, paid by grower, and 1 cent/cwt national assessment on production sold.

4/ Ten percent of total cost minus land charge.

Appendix table 2--Round white tablestock potatoes: Estimated hours of equipment and labor for production, Aroostook County, Maine, 1980

| Operation | Equipment used | Times over | Equipment excluding tractor | Tractor (50-65 hp) | Tractor (65-94 hp) | Tractor (95-125 hp) | Operator labor | Other labor |
|---|---|---|---|---|---|---|---|---|
| | | Number | Hours | | | | | |
| Preharvest: | | | | | | | | |
| Plow | Moldboard plow, 4-16" | 1 | 0.48 | N.A. | N.A. | 0.48 | 0.60 | N.A. |
| Soil preparation | Tandem disk, 12-foot | 1 | .21 | N.A. | 0.21 | N.A. | .26 | N.A. |
| | Springtooth harrow, 12-foot | 2 | .42 | N.A. | .42 | N.A. | .52 | N.A. |
| | Rock picker | 1 | .20 | 0.20 | N.A. | N.A. | .25 | N.A. |
| Planting | Planter, 4-row | 1 | .30 | N.A. | .30 | N.A. | .37 | 0.37 |
| | Seed cutter | N.A. | .20 | N.A. | N.A. | N.A. | N.A. | .50 |
| | Bucket loader | N.A. | .10 | N.A. | N.A. | N.A. | .12 | N.A. |
| | Cutter-to-truck conveyor | N.A. | .20 | N.A. | N.A. | N.A. | N.A. | .12 |
| | Electric generator | N.A. | .10 | N.A. | N.A. | N.A. | N.A. | N.A. |
| | Truck-to-planter conveyor | N.A. | .10 | N.A. | N.A. | N.A. | N.A. | N.A. |
| | Fertilizer tender | N.A. | .60 | N.A. | N.A. | N.A. | N.A. | .37 |
| | Truck, self-unload | N.A. | .60 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Cultivate | Cultivator, 4-row | 3 | .64 | N.A. | .64 | N.A. | .80. | N.A. |
| Spray | Sprayer, 54-foot | 12 | .75 | .75 | N.A. | N.A. | .94 | N.A. |
| Hauling supplies | Truck, sprayer-tender | 12 | .75 | N.A. | N.A. | N.A. | N.A. | .94 |
| Supervision | Pickup truck | N.A. | .75 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total preharvest | | N.A. | N.A. | .95 | 1.57 | .48 | 3.86 | 2.30 |
| Harvest: | | | | | | | | |
| Roll tops | Roller, 12-foot | 1 | .21 | .21 | N.A. | N.A. | .26 | N.A. |
| Killing vines | Sprayer, 54-foot | 2 | .12 | .12 | N.A. | N.A. | .15 | N.A. |
| | Water truck | 2 | .12 | N.A. | N.A. | N.A. | N.A. | .15 |
| Harvesting | Harvester, 2-row | 1 | 1.50 | N.A. | N.A. | 1.50 | 1.88 | 7.50 |
| Hauling potatoes | Truck, self-unload | N.A. | 3.75 | N.A. | N.A. | N.A. | N.A. | 4.69 |
| Unload | Bin piler, 32-foot | N.A. | .50 | N.A. | N.A. | N.A. | 1.88 | N.A. |
| Supervision | Pickup truck | N.A. | .25 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total harvest | | N.A. | N.A. | .33 | .00 | 1.50 | 4.17 | 12.19 |

N.A. = Not applicable.

Appendix table 3--Round white tablestock potatoes: Estimated cost for equipment used in production, 1980

| Cost item | New cost 1980 | Total depreciation 1/ | Annual use | Service life | Cost per hour | | |
|---|---|---|---|---|---|---|---|
| | | | | | Fuel and lube 2/ | Repair and maintenance 3/ | Total ownership 4/ |
| | Dollars | | Hours | | Dollars | | |
| Tractor, 115-horsepower | 29,300 | 20,656 | 600 | 6,000 | 6.35 | 2.07 | 7.23 |
| Tractor, 85-horsepower | 25,200 | 17,766 | 600 | 6,000 | 4.69 | 1.78 | 6.22 |
| Tractor, 60-horsepower | 15,800 | 11,139 | 600 | 6,000 | 3.31 | 1.12 | 3.91 |
| Moldboard plow, 4-bottom | 4,200 | 3,129 | 170 | 1,200 | N.A. | 1.61 | 4.47 |
| Tandem disk, 12-foot | 3,700 | 3,186 | 100 | 1,200 | N.A. | 1.42 | 5.19 |
| Springtooth harrow, 12-foot | 1,100 | 820 | 160 | 1,200 | N.A. | .42 | 1.20 |
| Roller, 12-foot | 800 | 570 | 200 | 2,000 | N.A. | .31 | .79 |
| Cultivator, 4-row | 1,900 | 1,636 | 100 | 1,200 | N.A. | .73 | 2.66 |
| Sprayer, 54-foot | 12,000 | 9,876 | 200 | 2,000 | N.A. | 6.02 | 9.18 |
| Planter, 4-row | 14,200 | 11,686 | 200 | 2,000 | N.A. | 6.37 | 10.85 |
| Harvester, 2-row, conventional | 28,400 | 23,373 | 200 | 2,000 | N.A. | 8.32 | 21.71 |
| Seed cutter | 10,200 | 8,945 | 150 | 2,000 | .10 | 2.99 | 9.05 |
| Rock picker | 6,000 | 5,166 | 100 | 1,200 | N.A. | 2.31 | 8.41 |
| Truck, self-unload | 17,500 | 13,545 | 400 | 3,200 | 5.38 | 3.31 | 7.45 |
| Truck, bulk fertilizer | 17,500 | 15,820 | 200 | 3,000 | 2.69 | 3.53 | 11.02 |
| Truck, sprayer tender | 13,000 | 11,752 | 200 | 3,000 | 2.69 | 2.62 | 8.19 |
| Pickup truck | 7,100 | 5,290 | 300 | 2,000 | 3.36 | 2.15 | 4.43 |
| Bucket loader | 10,000 | 8,230 | 200 | 2,000 | 2.42 | 2.93 | 7.65 |
| Cutter-to-truck conveyor | 5,300 | 4,648 | 150 | 2,000 | .10 | 1.95 | 4.70 |
| Truck-to-planter conveyor | 2,500 | 2,192 | 150 | 2,000 | N.A. | .92 | 2.22 |
| Electric generator | 800 | 702 | 150 | 2,000 | .40 | .30 | .71 |
| Bin piler, 32-foot | 7,500 | 6,172 | 200 | 2,000 | .15 | 2.75 | 5.94 |

N.A. = Not applicable.

1/ Depreciation equals new cost minus salvage value. Salvage value estimated as $0.68\ (0.920)^n$(new cost) for tractors and $0.60\ (0.885)^n$(new cost) for all other machinery where n = number years of service life. Based on American Society of Agricultural Engineers, 1979 Agricultural Engineers Yearbook.

2/ Fuel costs for gasoline engines estimated at 0.06 gallons times rated horsepower. Fuel costs for diesel engines estimated at 0.048 gal. times rated horsepower. Lubrication costs estimated at 15 percent of fuel costs. Diesel fuel was charged at $1 per gallon and gasoline at $1.17 per gallon.

3/ Repair and maintenance costs based on total accumulated repair (TAR) equations reported in American Society of Agricultural Engineers, 1977 Agricultural Engineers Yearbook, p. 329.

4/ Ownership costs include a replacement allowance and charges for interest, taxes, housing, and insurance. Hourly replacement allowance is derived by dividing total depreciation by hours of total service life. Annual interest was estimated at 12.7 percent and taxes at 2 percent of average actual investment. Housing and insurance were estimated at 2 percent of average new-cost investment. Hourly taxes, housing, and interest were derived by dividing the annual charge by hours of annual use.

Appendix table 4--Round white tablestock potatoes: Estimated machinery and equipment costs per acre for production, Aroostook County, Maine, 1980

| Cost item | Time used | Cost per hour | | | Total cost | | |
|---|---|---|---|---|---|---|---|
| | | Fuel and lube | Repairs | Ownership | Fuel and lube | Repairs | Ownership |
| | Hours | Dollars | | | | | |
| Preharvest tractor: | | | | | | | |
| 115-horsepower tractor | 0.48 | 6.35 | 2.07 | 7.23 | 3.05 | 0.99 | 3.47 |
| 85-horsepower tractor | 1.57 | 4.69 | 1.78 | 6.22 | 7.36 | 2.79 | 9.76 |
| 60-horsepower tractor | .95 | 3.31 | 1.12 | 3.91 | 3.14 | 1.06 | 3.71 |
| Total preharvest tractor | N.A. | N.A. | N.A. | N.A. | 13.55 | 4.84 | 16.94 |
| Preharvest machinery: | | | | | | | |
| Moldboard plow, 4-bottom | .48 | N.A. | 1.61 | 4.47 | N.A. | .77 | 2.14 |
| Tandem disk, 12-foot | .21 | N.A. | 1.42 | 5.19 | N.A. | .30 | 1.09 |
| Springtooth harrow, 12-foot | .42 | N.A. | .42 | 1.20 | N.A. | .18 | .50 |
| Rock picker | .20 | N.A. | 2.31 | 8.41 | N.A. | .46 | 1.68 |
| Planter, 4-row | .30 | N.A. | 6.37 | 10.85 | N.A. | 1.91 | 3.26 |
| Seed cutter | .20 | .10 | 2.99 | 9.05 | .02 | .60 | 1.81 |
| Bucket loader | .10 | 2.42 | 2.93 | 7.65 | .24 | .29 | .76 |
| Cutter-to-truck conveyor | .20 | .10 | 1.95 | 4.70 | .02 | .39 | .94 |
| Electric generator | .10 | .40 | .30 | .71 | .04 | .03 | .07 |
| Truck-to-planter conveyor | .10 | N.A. | .92 | 2.22 | N.A. | .09 | .22 |
| Fertilizer truck | .60 | 2.69 | 3.53 | 11.02 | 1.61 | 2.12 | 6.61 |
| Truck, self-unload | .60 | 5.38 | 3.31 | 7.45 | 3.23 | 1.99 | 4.47 |
| Cultivator, 4-row | .64 | N.A. | .73 | 2.66 | N.A. | .47 | 1.70 |
| Sprayer, 54-foot | .75 | N.A. | 6.02 | 9.18 | N.A. | 4.52 | 6.88 |
| Truck, sprayer tender | .75 | 2.69 | 2.62 | 8.19 | 2.02 | 1.96 | 6.14 |
| Pickup truck | .75 | 3.36 | 2.15 | 4.43 | 2.52 | 1.61 | 3.32 |
| Total preharvest machinery | N.A. | N.A. | N.A. | N.A. | 9.70 | 17.69 | 41.59 |
| Harvest tractor: | | | | | | | |
| 115-horsepower tractor | 1.50 | 6.35 | 2.07 | 7.23 | 9.53 | 3.11 | 10.84 |
| 60-horsepower tractor | .33 | 3.31 | 1.12 | 3.91 | 1.09 | .37 | 1.29 |
| Total harvest tractor | N.A. | N.A. | N.A. | N.A. | 10.62 | 3.48 | 12.13 |
| Harvest machinery: | | | | | | | |
| Roller, 12-foot | .21 | N.A. | .31 | .79 | N.A. | .07 | .16 |
| Sprayer, 54-foot | .12 | N.A. | 6.02 | 9.18 | N.A. | .72 | 1.10 |
| Truck, sprayer tender | .12 | 2.69 | 2.62 | 8.19 | .32 | .31 | .98 |
| Harvester | 1.50 | N.A. | 8.32 | 21.71 | N.A. | 12.48 | 32.56 |
| Pickup truck | .25 | 3.36 | 2.15 | 4.43 | .84 | .54 | 1.11 |
| Truck, self-unload | 3.75 | 5.38 | 3.31 | 7.45 | 20.18 | 12.41 | 27.94 |
| Bin piler, 32-foot | .50 | .15 | 2.75 | 5.94 | .07 | 1.38 | 2.97 |
| Total harvest machinery | N.A. | N.A. | N.A. | N.A. | 21.41 | 27.91 | 66.82 |

N.A. = Not applicable.

Appendix table 5--Russet tablestock potatoes: Estimated costs for growing and harvesting, Eastern Idaho, 1980

| Cost item | Unit | Quantity per acre | Price or cost per unit | Cost per acre | Cost per cwt |
|---|---|---|---|---|---|
| | | | ----------Dollars---------- | | |
| Yield | Cwt | 250 | N.A. | N.A. | N.A. |
| Variable: | | | | | |
| Preharvest-- | | | | | |
| Seed | do. | 20.4 | 5.00 | 102.00 | 0.41 |
| Seed treatment | Lbs. | 20 | .40 | 8.00 | .03 |
| Fertilizer custom application | Acre | 1 | 4.50 | 4.50 | .02 |
| Nitrogen | Lbs. | 222 | .288 | 63.94 | .26 |
| Phosphorus | do. | 160 | .30 | 48.00 | .19 |
| Potassium | do. | 43 | .135 | 5.81 | .02 |
| Zinc | do. | 5 | .83 | 4.15 | .02 |
| Herbicide: | | | | | |
| EPTC | Qt. | 2 | 6.25 | 12.50 | .05 |
| Metribuzin | do. | 1 | 20.25 | 20.25 | .08 |
| Insecticide: | | | | | |
| Disulfoton | Lbs. | 18 | .90 | 16.20 | .06 |
| Methamidophos | Pt. | 1 | 6.40 | 6.40 | .03 |
| Custom spray | Times | 3 | 5.00 | 15.00 | .06 |
| Fungicide (Mancozeb) | Lbs. | 2 | 1.95 | 3.90 | .02 |
| Tractor fuel and lube | Acre | 1 | 13.21 | 13.21 | .05 |
| Tractor repair | do. | 1 | 4.55 | 4.55 | .02 |
| Machinery fuel and lube | do. | 1 | 5.93 | 5.93 | .02 |
| Machinery repair | do. | 1 | 9.90 | 9.90 | .04 |
| Irrigation power | do. | 1 | 75.00 | 75.00 | .30 |
| Operator labor | Hrs. | 3.21 | 4.60 | 14.77 | .06 |
| Irrigation labor | do. | .70 | 4.60 | 3.22 | .01 |
| Other labor | do. | .63 | 3.81 | 2.40 | .01 |
| Interest on operating capital (12.7 percent of preharvest variable cost for 6 months) | Acre | 1 | 27.92 | 27.92 | .11 |
| Total preharvest 1/ | N.A. | N.A. | N.A. | 467.55 | 1.87 |
| Harvest-- | | | | | |
| Desiccant (aerial application) | Acre | 1 | 4.50 | 4.50 | .02 |
| Materials | Qt. | 2 | 2.45 | 4.90 | .02 |
| Tractor fuel and lube | Acre | 1 | 8.83 | 8.83 | .04 |
| Tractor repair | do. | 1 | 3.08 | 3.08 | .01 |
| Machinery fuel and lube | do. | 1 | 11.72 | 11.72 | .05 |
| Machinery repair | do. | 1 | 16.61 | 16.61 | .07 |
| Operator labor | Hrs. | 4.68 | 4.60 | 21.53 | .09 |
| Other labor | do. | 3.20 | 3.81 | 12.19 | .05 |
| Total harvest | N.A. | N.A. | N.A. | 83.76 | .33 |
| Total variable 1/ | N.A. | N.A. | N.A. | 550.91 | 2.20 |

See footnotes at end of table.

Continued--

Appendix table 5--Russet tablestock potatoes: Estimated costs for growing and harvesting, eastern Idaho, 1980--Continued

| Cost item | Unit | Quantity per acre | Price or cost per unit | Cost per acre | Cost per cwt |
|---|---|---|---|---|---|
| | | | ----------Dollars---------- | | |
| Ownership (replacement taxes, insurance, interest): | | | | | |
| Tractors | Acre | 1 | 29.08 | 29.08 | .12 |
| Machinery | do. | 1 | 58.63 | 58.63 | .23 |
| Total ownership 1/ | N.A. | N.A. | N.A. | 87.71 | .35 |
| Other: | | | | | |
| Land charge (cash rent) | Acre | 1 | 150.00 | 150.00 | .60 |
| General farm overhead 2/ | do. | 1 | 20.00 | 20.00 | .08 |
| Inspection and potato promotion tax (5.9 cents/cwt on 90 percent of production) 3/ | do. | 1 | 13.27 | 13.27 | .05 |
| Association dues | do. | 1 | 4.00 | 4.00 | .02 |
| Management charge 4/ | do. | 1 | 67.59 | 67.59 | .27 |
| Total other 1/ | N.A. | N.A. | N.A. | 254.86 | 1.02 |
| Total 1/ | N.A. | N.A. | N.A. | 893.48 | 3.57 |

N.A. = Not applicable.

1/ Components may not add to totals because of rounding.

2/ Includes telephone, legal, accounting, and other farm expenses not charged directly to potatoes.

3/ Includes 2.4 cents/cwt State assessment, paid by grower, and 1 cent/cwt national assessment on production sold.

4/ Ten percent of total cost minus land charge.

Appendix table 6--Russet tablestock potatoes: Estimated hours of equipment and labor for production, eastern Idaho, 1980

| Operation | Equipment used | Times over | Equipment excluding tractor | Tractor (65-94 hp) | Tractor (125-150 hp) | Operator labor | Irrigation labor | Other labor |
|---|---|---|---|---|---|---|---|---|
| | | Number | Hours | | | | | |
| Preharvest: | | | | | | | | |
| Fall disking | Tandem disk, 13-foot | 2 | 0.36 | N.A. | 0.36 | 0.45 | N.A. | N.A. |
| Soil preparation | Moldboard plow, 4-bottom | 1 | .46 | N.A. | .46 | .58 | N.A. | N.A. |
| | Tandem disk, 13-foot | 1 | .18 | N.A. | .18 | .23 | N.A. | N.A. |
| | Spiketooth harrow, 13-foot in tandem with disk | 1 | .18 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Mark rows | Cultivator, 4-row | 1 | .25 | 0.25 | N.A. | .31 | N.A. | N.A. |
| Cut seed | Scooper | N.A. | .20 | N.A. | N.A. | .25 | N.A. | N.A. |
| | Seed cutter | N.A. | .20 | N.A. | N.A. | N.A. | N.A. | 0.25 |
| | Cutter-to-truck conveyor | N.A. | .20 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Handle seed | Electric generator | N.A. | .10 | N.A. | N.A. | N.A. | N.A. | N.A. |
| | Truck-to-planter conveyor | N.A. | .10 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Hauling seed | Truck, self-unload | N.A. | .60 | N.A. | N.A. | .38 | N.A. | N.A. |
| Plant | Planter, 4-row | 1 | .30 | N.A. | .30 | .38 | N.A. | .38 |
| Cultivate | Cultivator, 4-row | 2 | .50 | .50 | N.A. | .63 | N.A. | N.A. |
| Spray | Custom applied | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Irrigation | Center pivot | N.A. | N.A. | N.A. | N.A. | N.A. | 0.70 | N.A. |
| Supervision | Pickup truck | N.A. | .75 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total preharvest | N.A. | N.A. | N.A. | .75 | 1.30 | 3.21 | .70 | .63 |
| Harvest: | | | | | | | | |
| Roll vines | Roller, 12-foot | 1 | .19 | .19 | N.A. | .24 | N.A. | N.A. |
| Defoliate | Custom applied | 1 | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Windrow | Windrower, 2-row | 1 | .40 | .40 | N.A. | .50 | N.A. | N.A. |
| Harvesting | Harvester, 2-row | 1 | .75 | N.A. | .75 | .94 | N.A. | 2.82 |
| Hauling | Truck, self-unload | N.A. | 2.00 | N.A. | N.A. | 2.50 | N.A. | N.A. |
| Unload | Bin piler | N.A. | .30 | N.A. | N.A. | .38 | N.A. | .38 |
| | Scraper | N.A. | .10 | .10 | N.A. | .12 | N.A. | N.A. |
| Supervision | Pickup truck | N.A. | .25 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total harvest | N.A. | N.A. | N.A. | .69 | .75 | 4.68 | N.A. | 3.20 |

N.A. = Not applicable.

Appendix table 7--Russet tablestock potatoes: Estimated cost for equipment used in production in Idaho, 1980

| Cost item | New cost 1980 | Total depreciation 1/ | Annual use | Service life | Cost per hour | | |
|---|---|---|---|---|---|---|---|
| | | | | | Fuel and lube 2/ | Repair and maintenance 3/ | Total ownership 4/ |
| | -------Dollars------- | | -------Hours------- | | ----------Dollars---------- | | |
| Tractor, 135-horsepower | 35,000 | 24,675 | 600 | 6,000 | 7.45 | 2.47 | 8.64 |
| Tractor, 85-horsepower | 25,200 | 20,286 | 400 | 6,000 | 4.69 | 1.78 | 7.90 |
| Packer, 6-foot | 1,800 | 1,213 | 230 | 1,200 | N.A. | .69 | 1.63 |
| Moldboard plow, 4-bottom | 4,200 | 2,831 | 230 | 1,200 | N.A. | 1.61 | 3.81 |
| Chisel plow, 18-foot | 5,600 | 3,774 | 230 | 1,200 | N.A. | 2.15 | 5.08 |
| Tandem disk, 13-foot | 6,700 | 4,516 | 250 | 1,200 | N.A. | 2.57 | 5.89 |
| Spriketooth harrow, 13-foot | 1,000 | 674 | 250 | 1,200 | N.A. | .38 | .88 |
| Subsoiler, 4-shank | 900 | 607 | 250 | 1,200 | N.A. | .35 | .80 |
| Spiketooth harrow, 18-foot | 1,400 | 944 | 250 | 1,200 | N.A. | .54 | 1.24 |
| Seed cutter | 10,200 | 8,945 | 150 | 2,000 | .10 | 2.99 | 9.05 |
| Truck-to-planter conveyor | 2,500 | 2,192 | 150 | 2,000 | N.A. | .92 | 2.22 |
| Electric generator | 800 | 702 | 150 | 2,000 | .40 | .30 | .71 |
| Planter, 4-row | 14,200 | 12,453 | 150 | 2,000 | N.A. | 6.37 | 12.61 |
| Cultivator, 4-row | 1,900 | 1,471 | 150 | 1,200 | N.A. | .73 | 2.15 |
| Roller, 12-foot | 800 | 570 | 200 | 1,200 | N.A. | .31 | .79 |
| Harvester, 2-row | 28,400 | 21,982 | 250 | 2,000 | N.A. | 8.32 | 19.34 |
| Windrower | 10,500 | 8,642 | 200 | 2,000 | N.A. | 3.07 | 8.03 |
| Truck, self-unload | 17,500 | 13,545 | 400 | 3,200 | 5.38 | 3.31 | 7.45 |
| Pickup truck | 7,100 | 4,785 | 400 | 2,000 | 3.36 | 2.15 | 3.80 |
| Scooper | 9,000 | 6,408 | 350 | 2,000 | .50 | 2.64 | 5.19 |
| Cutter-to-truck conveyor | 5,300 | 4,648 | 150 | 2,000 | .10 | 1.95 | 4.70 |
| Bin piler | 17,000 | 12,104 | 350 | 2,000 | .40 | 6.25 | 9.80 |
| Scraper | 900 | 789 | 150 | 2,000 | N.A. | .40 | .79 |

N.A. = Not applicable.

Note: For footnotes, see appendix table 3.

Appendix table 8--Russet tablestock potatoes: Estimated machinery and equipment costs per acre for production, eastern Idaho, 1980

| Cost item | Time used | Cost per hour | | | Total cost | | |
|---|---|---|---|---|---|---|---|
| | | Fuel and lube | Repairs | Owner-ship | Fuel and lube | Repairs | Owner-ship |
| | Hours | Dollars | | | | | |
| Preharvest tractor: | | | | | | | |
| 135-horsepower tractor | 1.30 | 7.45 | 2.47 | 8.64 | 9.69 | 3.21 | 11.23 |
| 85-horsepower tractor | .75 | 4.69 | 1.78 | 7.90 | 3.52 | 1.34 | 5.92 |
| Total preharvest tractor | N.A. | N.A. | N.A. | N.A. | 13.21 | 4.55 | 17.15 |
| Preharvest machinery: | | | | | | | |
| Moldboard plow, 4-bottom | .46 | N.A. | 1.61 | 3.81 | N.A. | .74 | 1.75 |
| Tandem disk, 13-foot | .54 | N.A. | 2.57 | 5.89 | N.A. | 1.39 | 3.18 |
| Spiketooth harrow, 13-foot | .18 | N.A. | .38 | .88 | N.A. | .07 | .16 |
| Scooper | .20 | .50 | 2.64 | 5.19 | .10 | .53 | 1.04 |
| Seed cutter | .20 | .10 | 2.99 | 9.05 | .02 | .60 | 1.81 |
| Cutter-to-truck conveyor | .20 | .10 | 1.95 | 4.70 | .02 | .39 | .94 |
| Electric generator | .10 | .40 | .30 | .71 | .04 | .03 | .07 |
| Truck-to-planter conveyor | .10 | N.A. | .92 | 2.22 | N.A. | .09 | .22 |
| Planter, 4-row | .30 | N.A. | 6.37 | 12.61 | N.A. | 1.91 | 3.78 |
| Cultivator, 4-row | .75 | N.A. | .73 | 2.15 | N.A. | .55 | 1.62 |
| Truck, self-unload | .60 | 5.38 | 3.31 | 7.45 | 3.23 | 1.99 | 4.47 |
| Pickup truck | .75 | 3.36 | 2.15 | 3.80 | 2.52 | 1.61 | 2.85 |
| Center pivot irrigation 1/ | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total preharvest machinery | N.A. | N.A. | N.A. | N.A. | 5.93 | 9.90 | 21.89 |
| Harvest tractor: | | | | | | | |
| 135-horsepower tractor | .75 | 7.45 | 2.47 | 8.64 | 5.59 | 1.85 | 6.48 |
| 85-horsepower tractor | .69 | 4.69 | 1.78 | 7.90 | 3.24 | 1.23 | 5.45 |
| Total harvest tractor | N.A. | N.A. | N.A. | N.A. | 8.83 | 3.08 | 11.93 |
| Harvest machinery: | | | | | | | |
| Roller, 12-foot | .19 | N.A. | .31 | .79 | N.A. | .06 | .15 |
| Windrower, 2-row | .40 | N.A. | 3.07 | 8.03 | N.A. | 1.23 | 3.21 |
| Harvester, 2-row | .75 | N.A. | 8.32 | 19.34 | N.A. | 6.24 | 14.51 |
| Truck, self-unload | 2.00 | 5.38 | 3.31 | 7.45 | 10.76 | 6.62 | 14.90 |
| Piler | .30 | .40 | 6.25 | 9.80 | .12 | 1.88 | 2.94 |
| Scraper | .10 | N.A. | .40 | .79 | N.A. | .04 | .08 |
| Pickup truck | .25 | 3.36 | 2.15 | 3.80 | .84 | .54 | .08 |
| Total harvest machinery | N.A. | N.A. | N.A. | N.A. | 11.72 | 16.61 | 36.74 |

N.A. = Not applicable.

1/ Ownership and repair costs for the irrigation equipment are included in the land rental charge. Irrigation power is included as a direct cost item in the budget.

Appendix table 9--Russet tablestock potatoes: Estimated costs for growing and harvesting in central Wisconsin, 1980

| Cost item | Unit | Quantity per acre | Price or cost per unit | Cost per acre | Cost per cwt |
|---|---|---|---|---|---|
| | | | ----------Dollars---------- | | |
| Yield | Cwt | 350 | N.A. | N.A. | N.A. |
| Variable: | | | | | |
| Preharvest-- | | | | | |
| Seed | do. | 18 | 5.50 | 99.00 | 0.28 |
| Seed treatment (captan) | Lbs. | 18 | .40 | 7.20 | .02 |
| Nitrogen | do. | 300 | .22 | 66.00 | .19 |
| Phosphorus | do. | 150 | .28 | 42.00 | .12 |
| Potassium | do. | 400 | .11 | 44.00 | .13 |
| Lime | Ton | .2 | 15.00 | 3.00 | .01 |
| Fertilizer custom application | Acre | 1 | 2.50 | 2.50 | .01 |
| Herbicide (Linuron) | Lbs. | 2 | 5.00 | 10.00 | .03 |
| Fungicide (Mancozeb 15x) | do. | 24 | 1.60 | 38.40 | .11 |
| Insecticide: | | | | | |
| Aldicarb | do. | 20 | 1.69 | 33.80 | .10 |
| Carbaryl 2x | do. | 3 | 2.20 | 6.60 | .02 |
| Methamidophos 2x | Pct. | 2 | 6.00 | 12.00 | .03 |
| Sprout inhibitor, MH | Gal. | 1 | 9.00 | 9.00 | .03 |
| Tractor fuel and lube | Acre | 1 | 12.87 | 12.87 | .04 |
| Tractor repair | do. | 1 | 4.70 | 4.70 | .01 |
| Machinery fuel and lube | do. | 1 | 9.16 | 9.16 | .03 |
| Machinery repair | do. | 1 | 18.54 | 18.54 | .05 |
| Irrigation power | do. | 1 | 50.00 | 50.00 | .14 |
| Operator labor | Hr. | 3.29 | 4.67 | 15.36 | .04 |
| Irrigation labor | do. | .70 | 6.96 | 4.87 | .01 |
| Other labor | do. | 2.37 | 3.57 | 8.46 | .02 |
| Interest on operating capital (12.7 percent of preharvest variable cost for 6 months) | Acre | 1 | 31.59 | 31.59 | .09 |
| Total preharvest 1/ | N.A. | N.A. | N.A. | 529.05 | 1.51 |
| Harvest-- | | | | | |
| Defoliant (DNBP) | Gal. | .5 | 9.75 | 4.88 | .01 |
| Crop oil | do. | .5 | 6.00 | 3.00 | .01 |
| Tractor fuel and lube | Acre | 1 | 8.62 | 8.62 | .02 |
| Tractor repair | do. | 1 | 2.92 | 2.92 | .01 |
| Machinery fuel and lube | do. | 1 | 22.48 | 22.48 | .06 |
| Machinery repair | do. | 1 | 24.91 | 24.91 | .07 |
| Operator labor | Hr. | 2.44 | 4.67 | 11.39 | .03 |
| Other labor | do. | 7.75 | 3.57 | 27.67 | .08 |
| Total harvest 1/ | N.A. | N.A. | N.A. | 105.87 | .30 |
| Total variable | N.A. | N.A. | N.A. | 634.92 | 1.81 |

See footnotes at end of table.

Continued--

Appendix table 9--Russet tablestock potatoes: Estimated costs for growing and harvesting in central Wisconsin, 1980--Continued

| Cost item | Unit | Quantity per acre | Price or cost per unit | Cost per acre | Cost per cwt |
|---|---|---|---|---|---|
| | | | ----------Dollars---------- | | |
| Ownership (replacement, taxes, insurance, interest): | | | | | |
| Tractors | Acre | 1 | 30.28 | 30.28 | .09 |
| Machinery | do. | 1 | 90.17 | 90.17 | .26 |
| Total ownership 1/ | N.A. | N.A. | N.A. | 120.45 | .34 |
| Other: | | | | | |
| Land charge (cash rent) 2/ | Acre | 1 | 150.00 | 150.00 | .43 |
| General farm overhead 3/ | do. | 1 | 20.00 | 20.00 | .06 |
| Potato promotion tax 4/ | do. | 1 | 6.30 | 6.30 | .02 |
| Management charge 5/ | do. | 1 | 78.17 | 78.17 | .22 |
| Total other 1/ | N.A. | N.A. | N.A. | 254.47 | .73 |
| Total 4/ | N.A. | N.A. | N.A. | 1,009.84 | 2.89 |

N.A. = Not applicable.

1/ Components may not add to totals because of rounding.

2/ Includes rental for land, well, and center pivot irrigation system.

3/ Includes telephone, legal, accounting, and other farm expenses not charged directly to potatoes.

4/ Includes 1 cent/cwt State assessment and 1 cent/cwt national assessment on production sold.

5/ Ten percent of total cost minus land charge.

Appendix table 10--Russet tablestock potatoes: Estimated hours of equipment and labor for production and harvesting in central Wisconsin, 1980

| Operation | Equipment used | Times over | Equipment excluding tractor | Tractor (65-94 hp) | Tractor (125-150 hp) | Operator labor | Other labor | Irrigation labor |
|---|---|---|---|---|---|---|---|---|
| | | Number | Hours | | | | | |
| Preharvest: | | | | | | | | |
| Soil preparation | Moldboard plow, 6-16" | 1 | 0.30 | N.A. | 0.30 | 0.37 | N.A. | N.A. |
| | Packer pulled in tandem with plow, 8-foot | 1 | .30 | N.A. | N.A. | N.A. | N.A. | N.A. |
| | Tandem disk, 20-foot | 2 | .22 | N.A. | .22 | .28 | N.A. | N.A. |
| Handling seed | Electric generator | N.A. | .10 | N.A. | N.A. | N.A. | N.A. | N.A. |
| | Truck-to-planter conveyor | N.A. | .10 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Cut seed | Scooper | N.A. | .20 | N.A. | N.A. | .25 | N.A. | N.A. |
| | Cutter-to-truck conveyor | N.A. | .20 | N.A. | N.A. | N.A. | 0.25 | N.A. |
| Unload | Bin piler | N.A. | .30 | N.A. | N.A. | .88 | N.A. | N.A. |
| | Scraper | N.A. | .10 | 0.10 | N.A. | .12 | N.A. | N.A. |
| Planting | Seed cutter | N.A. | .20 | N.A. | N.A. | N.A. | .25 | N.A. |
| | Planter, 4-row | 1 | .30 | .30 | N.A. | .37 | .37 | N.A. |
| Cultivate | Cultivator, 4-row | 2 | .42 | .42 | N.A. | .52 | N.A. | N.A. |
| Spray | Sprayer, 54-foot | 16 | 1.20 | 1.20 | N.A. | 1.50 | N.A. | N.A. |
| Hauling seed | Truck, self-unload | N.A. | 1.20 | N.A. | N.A. | N.A. | 1.50 | N.A. |
| Supervision | Pickup truck | N.A. | .75 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Irrigation | Center pivot | N.A. | N.A. | N.A. | N.A. | N.A. | .70 | 0.70 |
| Total preharvest | N.A. | N.A. | N.A. | 1.92 | .52 | 3.29 | 2.37 | .70 |
| Harvest: | | | | | | | | |
| Defoliate | Sprayer, 54-foot | 2 | .15 | .15 | N.A. | .19 | N.A. | N.A. |
| Harvesting | Harvester, 2-row | 1 | 1.00 | N.A. | 1.00 | 1.25 | 2.50 | N.A. |
| Hauling potatoes | Truck, self-unload | N.A. | 4.00 | N.A. | N.A. | N.A. | 5.00 | N.A. |
| Supervision | Pickup truck | N.A. | .25 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total harvest | N.A. | N.A. | N.A. | .25 | 1.00 | 2.44 | 7.75 | N.A. |

N.A. = Not applicable.

Appendix table 11--Russet tablestock potatoes: Estimated cost for equipment used in production, central Wisconsin, 1980

| Cost item | New cost, 1980 | Total depreciation 1/ | Annual use | Service life | Cost per hour | | |
|---|---|---|---|---|---|---|---|
| | | | | | Fuel and lube 2/ | Repair and maintenance 3/ | Total ownership 4/ |
| | -------Dollars------- | | -------Hours------- | | ----------Dollars---------- | | |
| Tractor, 135-horsepower | 35,000 | 24,675 | 600 | 6,000 | 7.45 | 2.47 | 8.64 |
| Tractor, 85-horsepower | 25,200 | 20,286 | 400 | 6,000 | 4.69 | 1.78 | 7.90 |
| Moldboard plow, 6-16" | 6,300 | 3,982 | 300 | 1,200 | N.A. | 2.42 | 5.04 |
| Packer, 8-foot | 2,400 | 1,517 | 300 | 1,200 | N.A. | .92 | 1.92 |
| Tandem disk, 20-foot | 10,300 | 6,942 | 240 | 1,200 | N.A. | 3.96 | 9.19 |
| Electric generator | 800 | 702 | 150 | 2,000 | .40 | .30 | .71 |
| Truck-to-planter conveyor | 2,500 | 2,192 | 150 | 2,000 | N.A. | .92 | 2.22 |
| Planter, 4-row | 14,200 | 12,453 | 150 | 2,000 | N.A. | 6.37 | 12.61 |
| Seed cutter | 10,200 | 8,945 | 150 | 2,000 | .10 | 2.99 | 9.05 |
| Cultivator, 4-row | 1,900 | 1,471 | 150 | 1,200 | N.A. | .73 | 2.15 |
| Sprayer, 54-foot | 12,000 | 9,876 | 200 | 2,000 | N.A. | 6.02 | 9.18 |
| Harvester, 2-row | 28,400 | 21,982 | 250 | 2,000 | N.A. | 8.32 | 19.34 |
| Truck, self-unload | 17,500 | 13,545 | 400 | 3,200 | 5.38 | 3.31 | 7.45 |
| Pickup truck | 7,100 | 4,785 | 400 | 2,000 | 3.36 | 2.15 | 3.80 |
| Scooper | 9,000 | 6,408 | 350 | 2,000 | .50 | 2.64 | 5.19 |
| Cutter-to-truck conveyor | 5,300 | 4,648 | 150 | 2,000 | .10 | 1.95 | 4.70 |
| Bin piler | 17,000 | 12,104 | 350 | 2,000 | .40 | 6.25 | 9.80 |
| Scraper | 900 | 789 | 150 | 2,000 | N.A. | .40 | .79 |

N.A. = Not applicable.
Note: For footnotes, see appendix table 3.

Appendix table 12--Russet tablestock potatoes: Estimated machinery and equipment costs per acre for production, central Wisconsin, 1980

| Cost item | Time used | Cost per hour | | | Total cost | | |
|---|---|---|---|---|---|---|---|
| | | Fuel and lube | Repairs | Ownership | Fuel and lube | Repairs | Ownership |
| | Hours | Dollars | | | | | |
| Preharvest tractor: | | | | | | | |
| 135-horsepower tractor | 0.52 | 7.45 | 2.47 | 8.64 | 3.87 | 1.28 | 4.49 |
| 85-horsepower tractor | 1.92 | 4.69 | 1.78 | 7.90 | 9.00 | 3.42 | 15.17 |
| Total preharvest tractor | N.A. | N.A. | N.A. | N.A. | 12.87 | 4.70 | 19.66 |
| Preharvest machinery: | | | | | | | |
| Moldboard plow, 6-16" | .30 | N.A. | 2.42 | 5.04 | N.A. | .73 | 1.51 |
| Packer, 8-foot | .30 | N.A. | .92 | 1.92 | N.A. | .28 | .58 |
| Tandem disk | .22 | N.A. | 3.96 | 9.19 | N.A. | .87 | 2.02 |
| Scooper | .20 | .50 | 2.64 | 5.19 | .10 | .53 | 1.04 |
| Cutter-to-truck conveyor | .20 | .10 | 1.95 | 4.70 | .02 | .39 | .94 |
| Electric generator | .10 | .40 | .30 | .71 | .04 | .03 | .07 |
| Truck-to-planter conveyor | .10 | N.A. | .92 | 2.22 | N.A. | .09 | .22 |
| Planter, 4-row | .30 | N.A. | 6.37 | 12.61 | N.A. | 1.91 | 3.78 |
| Seed cutter | .20 | .10 | 2.99 | 9.05 | .02 | .60 | 1.81 |
| Cultivator, 4-row | .42 | N.A. | .73 | 2.15 | N.A. | .31 | .90 |
| Sprayer, 54-foot | 1.20 | N.A. | 6.02 | 9.18 | N.A. | 7.22 | 11.02 |
| Truck, self-unload | 1.20 | 5.38 | 3.31 | 7.45 | 6.46 | 3.97 | 8.94 |
| Pickup truck | .75 | 3.36 | 2.15 | 3.80 | 2.52 | 1.61 | 2.85 |
| Center pivot irrigation 1/ | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total preharvest machinery | N.A. | N.A. | N.A. | N.A. | 9.16 | 18.54 | 35.68 |
| Harvest tractor: | | | | | | | |
| 135-horsepower tractor | 1.00 | 7.45 | 2.47 | 8.64 | 7.45 | 2.47 | 8.64 |
| 85-horsepower tractor | .25 | 4.69 | 1.78 | 7.90 | 1.17 | .45 | 1.98 |
| Total harvest tractor | N.A. | N.A. | N.A. | N.A. | 8.62 | 2.92 | 10.62 |
| Harvest machinery: | | | | | | | |
| Sprayer, 54-foot | .15 | N.A. | 6.02 | 9.18 | N.A. | .90 | 1.38 |
| Harvester, 2-row | 1.00 | N.A. | 8.32 | 19.34 | N.A. | 8.32 | 19.34 |
| Truck, self-unload | 4.00 | 5.38 | 3.31 | 7.45 | 21.52 | 13.24 | 29.80 |
| Bin piler | .30 | .40 | 6.25 | 9.80 | .12 | 1.88 | 2.94 |
| Scraper | .10 | N.A. | .40 | .79 | N.A. | .04 | .08 |
| Pickup truck | .25 | 3.36 | 2.15 | 3.80 | .84 | .54 | .95 |
| Total harvest machinery | N.A. | N.A. | N.A. | N.A. | 22.48 | 24.92 | 54.49 |

N.A. = Not applicable.

1/ Ownership and repair costs for the irrigation equipment are included in the land rental charge. Irrigation power is included as a direct cost item in the budget.

Appendix table 13--Russet processing potatoes: Estimated costs for growing and harvesting, Washington, 1980

| Cost item | Unit | Quantity per acre | Price or cost per unit | Cost per acre | Cost per cwt |
|---|---|---|---|---|---|
| | | | ----------Dollars---------- | | |
| Yield | Cwt | 460 | N.A. | N.A. | N.A. |
| Variable: | | | | | |
| Preharvest-- | | | | | |
| Fumigation (materials and application) | Acre | 0.5 | 180.00 | 90.00 | 0.20 |
| Seed (cut and treated) | Cwt | 22.64 | 7.00 | 158.48 | .34 |
| Seed freight | do. | 22.64 | 1.25 | 28.30 | .06 |
| Fertilizer custom application | Acre | 1 | 4.00 | 4.00 | .01 |
| Nitrogen | Lbs. | 393 | .288 | 113.18 | .25 |
| Phosphorus | do. | 218 | .300 | 65.40 | .14 |
| Potassium | do. | 236 | .135 | 31.86 | .07 |
| Zinc | do. | 10 | .83 | 8.30 | .02 |
| Boron | do. | 1 | 1.93 | 1.93 | .01 |
| Herbicide (Metribuzin) | Qt. | .5 | 20.25 | 10.12 | .02 |
| Systemic insecticide (Aldicarb) | Lbs. | 20.00 | 2.05 | 41.00 | .09 |
| Custom application 3x aerial | Times | 3 | 5.50 | 16.50 | .04 |
| Sprout inhibitor (MH) | Acre | .33 | 9.00 | 2.97 | .01 |
| Fungicide (Diflolaton) | Qt. | 3 | 6.40 | 19.20 | .04 |
| Folier insecticide (Methamidophos) | Pt. | 3 | 6.25 | 18.75 | .04 |
| Water charge | Acre | 1 | 20.00 | 20.00 | .04 |
| Tractor fuel and lube | do. | 1 | 14.56 | 14.56 | .03 |
| Tractor repair | do. | 1 | 4.94 | 4.94 | .01 |
| Machinery fuel and lube | do. | 1 | 5.79 | 5.79 | .01 |
| Machinery repair | do. | 1 | 8.45 | 8.45 | .02 |
| Irrigation power | do. | 1 | 20.00 | 20.00 | .04 |
| Operator labor | Hr. | 2.12 | 4.89 | 10.37 | .02 |
| Irrigation labor | do. | .84 | 7.12 | 5.98 | .01 |
| Other labor | do. | .76 | 4.60 | 3.50 | .01 |
| Interest on operating capital (12.7 percent of preharvest variable cost for 6 months) | Acre | 1 | 44.68 | 44.68 | .10 |
| Total preharvest 1/ | N.A. | N.A. | N.A. | 748.26 | 1.63 |

See footnotes at end of table.

Continued--

Appendix table 13--Russet processing potatoes: Estimated costs for growing and harvesting, Washington, 1980--Continued

| Cost item | Unit | Quantity per acre | Price or cost per unit | Cost per acre | Cost per cwt |
|---|---|---|---|---|---|
| | | | ----------Dollars---------- | | |
| Harvest-- | | | | | |
| Desiccant (aerial application) | Acre | 1 | 5.50 | 5.50 | .01 |
| Material | Qt. | 5 | 2.25 | 11.25 | .02 |
| Tractor fuel and lube | Acre | 1 | 7.92 | 7.92 | .02 |
| Tractor repair | do. | 1 | 2.65 | 2.65 | .01 |
| Machinery fuel and lube | do. | 1 | 17.14 | 17.14 | .04 |
| Machinery repair | do. | 1 | 21.33 | 21.33 | .05 |
| Operator labor | Hr. | 5.62 | 4.89 | 27.48 | .06 |
| Other labor | do. | 3.00 | 4.60 | 13.80 | .03 |
| Total harvest 1/ | N.A. | N.A. | N.A. | 107.07 | .24 |
| Total variable 1/ | N.A. | N.A. | N.A. | 855.33 | 1.86 |
| Ownership (replacement taxes, insurance, interest): | | | | | |
| Tractors | Acre | 1 | 27.62 | 27.62 | .06 |
| Machinery | do. | 1 | 64.25 | 53.29 | .14 |
| Total ownership 1/ | N.A. | N.A. | N.A. | 91.91 | .20 |
| Other: | | | | | |
| Land charge (cash rent) 2/ | do. | 1 | 225.00 | 225.00 | .49 |
| General farm overhead 3/ | do. | 1 | 20.20 | 20.00 | .04 |
| Inspection | Cwt | 460 | .04 | 18.40 | .04 |
| Potato promotion tax 4/ | do. | 460 | .04 | 18.40 | .04 |
| Management charge 5/ | Acre | 1 | 100.40 | 100.40 | .22 |
| Total other 1/ | N.A. | N.A. | N.A. | 382.20 | .83 |
| Total 1/ | N.A. | N.A. | N.A. | 1,329.44 | 2.89 |

N.A. = Not applicable.

1/ Components may not add to totals because of rounding.

2/ The land charge is for land with irrigation equipment in place. Ownership and repair charges for irrigation facilities are included in the land charge.

3/ Includes telephone, legal, accounting, and other farm expenses not charged directly to potatoes.

4/ Includes 3 cents/cwt State assessment and 1 cent/cwt national assessment on production sold.

5/ Ten percent of total cost minus land charge.

Appendix table 14--Russet processing potatoes: Estimated hours of equipment and labor for production in Washington, 1980

| Operation | Equipment used | Times over | Equipment excluding tractor | Tractor (125-150 hp) | Tractor (65-94 hp) | Operator labor | Other labor | Irrigation labor |
|---|---|---|---|---|---|---|---|---|
| | | Number | Hours | | | | | |
| Preharvest: | | | | | | | | |
| Fumigate | Custom applied | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Soil preparation | Moldboard plow, 4-bottom | 1 | 0.46 | 0.46 | N.A. | 0.58 | N.A. | N.A. |
| | 6-foot packer in tandem with plow | 1 | .46 | .46 | N.A. | N.A. | N.A. | N.A. |
| | 13-foot tandem disk | 2 | .40 | .40 | N.A. | .50 | N.A. | N.A. |
| | 13-foot packer in tandem with disk | 2 | .40 | N.A | N.A. | N.A. | N.A. | N.A. |
| Spread fertilizer | Custom applied | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Handle seed | Electric generator | N.A. | .10 | N.A. | N.A. | N.A. | N.A. | N.A. |
| | Truck-to-planter conveyor | N.A. | .10 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Planting | Planter, 4-row | 1 | .30 | .30 | N.A. | .38 | .38 | N.A. |
| Hauling seed | Truck, self-unload | 1 | .60 | N.A. | N.A. | N.A. | .38 | N.A. |
| Cultivate | Cultivator, 4-row | 2 | .53 | N.A. | .53 | .66 | N.A. | N.A. |
| Supervision | Pickup truck | N.A. | .75 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Spray | Custom applied | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Irrigation | Center pivot | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | .84 |
| Total preharvest | | N.A. | N.A. | 1.62 | .53 | 2.12 | .76 | .84 |
| Harvest: | | | | | | | | |
| Defoliate | Custom applied | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Harvesting | Harvester, 2-row | 1 | 1.00 | 1.00 | N.A. | 1.25 | 2.50 | N.A. |
| Hauling potatoes | Truck, self-unload | N.A. | 3.00 | N.A. | N.A. | 3.75 | N.A. | N.A. |
| Unload | Bin piler | N.A. | .40 | N.A. | N.A. | .50 | .50 | N.A. |
| | Scraper | N.A. | .10 | N.A. | 10 | .12 | N.A. | N.A. |
| Supervision | Pickup truck | N.A. | .25 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total harvest | | N.A. | N.A. | 1.00 | .10 | 5.62 | 3.00 | N.A. |

N.A. = Not applicable.

Appendix table 15--Russet processing potatoes: Description and estimated cost for equipment used in production in Washington, 1980

| Cost item | New cost 1980 | Total depreciation 1/ | Annual use | Service life | Cost per hour | | |
|---|---|---|---|---|---|---|---|
| | | | | | Fuel and lube 2/ | Repair and maintenance 3/ | Total ownership 4/ |
| | -------Dollars------- | | -------Hours------- | | ----------Dollars---------- | | |
| Tractor, 135-horsepower | 35,000 | 24,675 | 600 | 6,000 | 7.45 | 2.47 | 8.64 |
| Tractor, 85-horsepower | 25,200 | 20,286 | 400 | 6,000 | 4.69 | 1.78 | 7.90 |
| Moldboard plow, 4-bottom | 4,200 | 2,831 | 230 | 1,200 | N.A. | 1.61 | 3.81 |
| Tandem disk, 13-foot | 6,700 | 4,516 | 250 | 1,200 | N.A. | 2.57 | 5.89 |
| Packer, 6-foot | 1,800 | 1,213 | 230 | 1,200 | N.A. | .69 | 1.63 |
| Packer, 13-foot | 2,200 | 1,483 | 250 | 1,200 | N.A. | .85 | 1.94 |
| Planter, 4-row | 14,200 | 11,687 | 200 | 2,000 | N.A. | 6.37 | 10.85 |
| Truck-to-planter conveyor | 2,500 | 2,192 | 150 | 2,000 | N.A. | .92 | 2.22 |
| Electric generator | 800 | 702 | 150 | 2,000 | .40 | .30 | .71 |
| Cultivator, 4-row | 1,900 | 1,470 | 150 | 1,200 | N.A. | .73 | 2.15 |
| Harvester, 2-row | 28,400 | 21,982 | 250 | 2,000 | N.A. | 8.32 | 19.34 |
| Truck, self-unload | 17,500 | 13,545 | 400 | 3,200 | 5.38 | 3.31 | 7.45 |
| Pickup truck | 7,100 | 4,785 | 400 | 2,000 | 3.36 | 2.15 | 3.80 |
| Bin piler | 17,000 | 12,104 | 350 | 2,000 | .40 | 6.25 | 9.80 |
| Scraper | 900 | 789 | 150 | 2,000 | N.A. | .40 | .79 |

N.A. = Not applicable.
Note: For footnotes, see appendix table 3.

Appendix table 16--Russet processing potatoes: Estimated machinery and equipment costs per acre for production in Washington, 1980

| Cost item | Time used | Cost per hour | | | Total cost | | |
|---|---|---|---|---|---|---|---|
| | | Fuel and lube | Repairs | Owner-ship | Fuel and lube | Repairs | Owner-ship |
| | Hours | Dollars | | | | | |
| Preharvest tractor: | | | | | | | |
| 135-horsepower tractor | 1.62 | 7.45 | 2.47 | 8.64 | 12.07 | 4.00 | 14.00 |
| 85-horsepower tractor | .53 | 4.69 | 1.78 | 7.90 | 2.49 | .94 | 4.19 |
| Total preharvest tractor | N.A. | N.A. | N.A. | N.A. | 14.56 | 4.94 | 18.19 |
| Preharvest machinery: | | | | | | | |
| Moldboard plow, 4-bottom | .46 | N.A. | 1.61 | 3.81 | N.A. | .74 | 1.75 |
| Tandem disk, 13-foot | .40 | N.A. | 2.57 | 5.89 | N.A. | 1.03 | 2.36 |
| Packer, 6-foot | .46 | N.A. | .69 | 1.63 | N.A. | .32 | .75 |
| Packer, 13-foot | .40 | N.A. | .85 | 1.94 | N.A. | .34 | .78 |
| Planter, 4-row | .30 | N.A. | 6.37 | 10.85 | N.A. | 1.91 | 3.26 |
| Cultivator, 4-row | .53 | N.A. | .73 | 2.15 | N.A. | .39 | 1.14 |
| Truck, self-unload | .60 | 5.38 | 3.31 | 7.45 | 3.23 | 1.99 | 4.47 |
| Electric generator | .10 | .40 | .30 | .71 | .04 | .03 | .07 |
| Truck-to-planter conveyor | .10 | N.A. | .92 | 2.22 | N.A. | .09 | .22 |
| Pickup truck | .75 | 3.36 | 2.15 | 3.80 | 2.52 | 1.61 | 2.85 |
| Center pivot irrigation 1/ | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total preharvest machinery | N.A. | N.A. | N.A. | N.A. | 5.79 | 8.45 | 17.65 |
| Harvest tractor: | | | | | | | |
| 135-horsepower tractor | 1.00 | 7.45 | 2.47 | 8.64 | 7.45 | 2.47 | 8.64 |
| 85-horsepower tractor | .10 | 4.69 | 1.78 | 7.90 | .47 | .18 | .79 |
| Total harvest tractor | N.A. | N.A. | N.A. | N.A. | 7.92 | 2.65 | 9.43 |
| Harvest machinery: | | | | | | | |
| Harvester | 1.00 | N.A. | 8.32 | 19.34 | N.A. | 8.32 | 19.34 |
| Truck, self-unload | 3.00 | 5.38 | 3.31 | 7.45 | 16.14 | 9.93 | 22.35 |
| Bin piler | .40 | .40 | 6.25 | 9.80 | .16 | 2.50 | 3.92 |
| Scraper | .10 | N.A. | .40 | .79 | N.A. | .04 | .08 |
| Pickup truck | .25 | 3.36 | 2.15 | 3.80 | .84 | .54 | .95 |
| Total harvest machinery | N.A. | N.A. | N.A. | N.A. | 17.14 | 21.33 | 46.64 |

N.A. = Not applicable.

1/ Ownership and repair costs for the irrigation equipment are included in the land rental charge. Irrigation power is included as a direct cost item in the budget.

Appendix table 17--Russet processing potatoes: Estimated costs for growing and harvesting in south-central Idaho, 1980

| Cost item | Unit | Quantity per acre | Price or cost per unit | Cost per acre | Cost per cwt |
|---|---|---|---|---|---|
| | | | ----------Dollars---------- | | |
| Yield | Cwt | 290 | N.A. | N.A. | N.A. |
| Variable: | | | | | |
| Preharvest-- | | | | | |
| Seed | do. | 21.65 | 5.50 | 119.08 | 0.41 |
| Seed treatment | Lbs. | 20 | .40 | 8.00 | .03 |
| Fertilizer custom application | Acre | 1 | 4.50 | 4.50 | .02 |
| Nitrogen | Lbs. | 262 | .26 | 68.12 | .23 |
| Phosphorus | do. | 173 | .27 | 46.71 | .16 |
| Potassium | do. | 37 | .125 | 4.62 | .02 |
| Zinc | do. | 5 | .83 | 4.15 | .01 |
| Boron | do. | 1 | 3.00 | 3.00 | .01 |
| Manganese | do. | 5 | 1.13 | 5.65 | .02 |
| Herbicide: | | | | | |
| EPTC | Qt. | 2 | 6.25 | 12.50 | .04 |
| Metribuzin | do. | 1 | 20.25 | 20.25 | .07 |
| Insecticide: | | | | | |
| Disulfoton | Lbs. | 20 | .90 | 18.00 | .06 |
| Methamidophos | Pt. | 1 | 6.40 | 6.40 | .02 |
| Fungicide (Mancozeb) | Lbs. | 3 | 1.95 | 5.85 | .02 |
| Aerial application | Times | 4 | 6.00 | 24.00 | .08 |
| Tractor fuel and lube | Acre | 1 | 11.30 | 11.30 | .04 |
| Tractor repair | do. | 1 | 3.90 | 3.90 | .01 |
| Machinery fuel and lube | do. | 1 | 5.93 | 5.93 | .02 |
| Machinery repair | do. | 1 | 9.45 | 9.45 | .03 |
| Irrigation power | do. | 1 | 75.00 | 75.00 | .26 |
| Operator labor | Hrs. | 2.77 | 4.60 | 12.74 | .04 |
| Irrigation labor | do. | .70 | 4.60 | 3.22 | .01 |
| Other labor | do. | .63 | 3.81 | 2.40 | .01 |
| Interest on operating capital (12.7 percent of preharvest variable cost for 6 months) | N.A. | N.A. | N.A. | 30.15 | .10 |
| Total preharvest 1/ | N.A. | N.A. | N.A. | 504.92 | 1.74 |

See footnotes at end of table.

Continued--

Appendix table 17--Russet processing potatoes: Estimated costs for growing and harvesting in south-central Idaho, 1980--Continued

| Cost item | Unit | Quantity per acre | Price or cost per unit | Cost per acre | Cost per cwt |
|---|---|---|---|---|---|
| | | | ----------Dollars---------- | | |
| Harvest-- | | | | | |
| Defoliant: | | | | | |
| Aerial application | Acre | 1 | 6.50 | 6.50 | 0.02 |
| Material | Qt. | 1 | 2.45 | 2.45 | .01 |
| Tractor fuel and lube | Acre | 1 | 8.07 | 8.07 | .03 |
| Tractor repair | do. | 1 | 2.74 | 2.74 | .01 |
| Machinery fuel and lube | do. | 1 | 14.41 | 14.41 | .05 |
| Machinery repair | do. | 1 | 18.29 | 18.29 | .06 |
| Operator labor | Hrs. | 4.98 | 4.60 | 22.91 | .08 |
| Other labor | do. | 2.63 | 3.81 | 10.02 | .03 |
| Total harvest | N.A. | N.A. | N.A. | 85.39 | .29 |
| Total variable | N.A. | N.A. | N.A. | 590.31 | 2.04 |
| Ownership (replacement taxes, insurance, interest): | | | | | |
| Tractors | Acre | 1 | 24.92 | 24.92 | .09 |
| Machinery | do. | 1 | 60.96 | 60.97 | .21 |
| Total ownership 1/ | N.A. | N.A. | N.A. | 85.89 | .30 |
| Other: | | | | | |
| Land charge (cash rent) 2/ | do. | 1 | 175.00 | 175.00 | .60 |
| General farm overhead 3/ | do. | 1 | 20.00 | 20.00 | .07 |
| Inspection and potato promotion tax 4/ | do. | 1 | 15.40 | 15.40 | .05 |
| Assessment dues | do. | 1 | 4.00 | 4.00 | .01 |
| Management charge 5/ | do. | 1 | 71.56 | 71.56 | .25 |
| Total other 1/ | N.A. | N.A. | N.A. | 285.96 | .99 |
| Total 1/ | N.A. | N.A. | N.A. | 962.16 | 3.32 |

N.A. = Not applicable.

1/ Components may not add to totals because of rounding.

2/ Includes rental for land and center pivot irrigation system.

3/ Includes telephone, legal, accounting, and other farm expenses not charged directly to potatoes.

4/ Includes 2.4 cents/cwt State assessment and 1 cent/cwt national assessment on production sold and 2.5 cents/cwt for inspection.

5/ Ten percent of total cost minus land charge.

Appendix table 18--Russet processing potatoes: Estimated hours of equipment and labor for production and harvesting in south-central Idaho, 1980

| Operation | Equipment used | Times over | Equipment excluding tractor | Tractor (65-94 hp) | Tractor (125-150 hp) | Operator labor | Irrigation labor | Other labor |
|---|---|---|---|---|---|---|---|---|
| | | Number | Hours | | | | | |
| Preharvest: | | | | | | | | |
| Fall disking | Tandem disk, 13-foot | 2 | 0.36 | N.A. | 0.36 | 0.45 | N.A. | N.A. |
| Soil preparation | Chisel plow, 18-foot | 1 | .15 | N.A. | .15 | .19 | N.A. | N.A. |
| | Tandem disk, 13-foot | 1 | .18 | N.A. | .18 | .23 | N.A. | N.A. |
| | Spiketooth harrow, 13-foot in tandem with disk | 1 | .18 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Mark rows | Cultivator, 4-row | 1 | .21 | .21 | N.A. | .26 | N.A. | N.A. |
| Cut seed | Scooper | N.A. | .20 | N.A. | N.A. | .25 | N.A. | N.A. |
| | Seed cutter | N.A. | .20 | N.A. | N.A. | N.A. | N.A. | 0.25 |
| | Cutter-to-truck conveyor | N.A. | .20 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Unload | Bin piler | N.A. | .30 | N.A. | N.A. | .38 | N.A. | .38 |
| | Scraper | N.A. | .10 | .10 | N.A. | .12 | N.A. | N.A. |
| Handle seed | Electric generator | N.A. | .10 | N.A. | N.A. | N.A. | N.A. | N.A. |
| | Truck-to-planter conveyor | N.A. | .10 | N.A. | N.A. | N.A. | N.A. | N A. |
| Hauling seed | Truck, self-unload | N.A. | .60 | N.A. | N.A. | .38 | N.A. | N.A. |
| Planting | Planter, 4-row | 1 | .30 | N.A. | .38 | .38 | N.A. | .38 |
| Cultivate | Cultivator, 4-row | 2 | .50 | .50 | N.A. | .63 | N.A. | N.A. |
| Spray | Custom applied | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Irrigation | Center pivot | N.A. | N.A. | N.A. | N.A. | N.A. | 0.70 | N.A. |
| Supervision | Pickup truck | N.A. | .75 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total preharvest | | N.A. | N.A. | .71 | 1.07 | 2.77 | .70 | .63 |
| Harvest: | | | | | | | | |
| Roll vines | Roller, 12-foot | 1 | .19 | .19 | N.A. | .24 | N.A. | N.A. |
| Harvesting | Harvester, 2-row | 1 | .90 | N.A. | .90 | 1.12 | N.A. | 2.25 |
| Hauling potatoes | Truck, self-unload | N.A. | 2.5 | N.A. | N.A. | 3.12 | N.A. | N.A. |
| Supervision | Pickup truck | N.A. | .25 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Defoliate | Custom applied | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total harvest | | N.A. | N.A. | .29 | .90 | 4.98 | N.A. | 2.63 |

N.A. = Not applicable.

Appendix table 19--Russet processing potatoes: Estimated machinery and equipment costs per acre for production in south-central Idaho, 1980

| Cost item | Time used | Cost per hour 1/ | | | Total cost | | |
|---|---|---|---|---|---|---|---|
| | | Fuel and lube | Repairs | Owner-ship | Fuel and lube | Repairs | Owner-ship |
| | Hours | ---------- | ---------- | Dollars | ---------- | ---------- | |
| Preharvest tractor: | | | | | | | |
| 135-horsepower tractor | 1.07 | 7.45 | 2.47 | 8.64 | 7.97 | 2.64 | 9.24 |
| 85-horsepower tractor | .71 | 4.69 | 1.78 | 7.90 | 3.33 | 1.26 | 5.61 |
| Total preharvest tractor | N.A. | N.A. | N.A. | N.A. | 11.30 | 3.90 | 14.85 |
| Preharvest machinery: | | | | | | | |
| Chisel plow | .15 | N.A. | 2.15 | 5.08 | N.A. | .32 | .76 |
| Tandem disk, 13-foot | .54 | N.A. | 2.57 | 5.89 | N.A. | 1.39 | 3.18 |
| Spiketooth harrow, 13-foot | .18 | N.A. | .38 | .88 | N.A. | .07 | .16 |
| Scooper | .20 | .50 | 2.64 | 5.19 | .10 | .53 | 1.04 |
| Seed cutter | .20 | .10 | 2.99 | 9.05 | .02 | .60 | 1.81 |
| Cutter-to-truck conveyor | .20 | .10 | 1.95 | 4.70 | .02 | .39 | .94 |
| Electric generator | .10 | .40 | .30 | .71 | .04 | .03 | .07 |
| Truck-to-planter conveyor | .10 | N.A. | .92 | 2.22 | N.A. | .09 | .22 |
| Planter, 4-row | .30 | N.A. | 6.37 | 12.61 | N.A. | 1.91 | 3.78 |
| Cultivator, 4-row | .71 | N.A. | .73 | 2.15 | N.A. | .52 | 1.53 |
| Truck, self-unload | .60 | 5.38 | 3.31 | 7.45 | 3.23 | 1.99 | 4.47 |
| Pickup truck | .75 | 3.36 | 2.15 | 3.80 | 2.52 | 1.61 | 2.85 |
| Center pivot irrigation 2/ | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total preharvest machinery | N.A. | N.A. | N.A. | N.A. | 5.93 | 9.45 | 20.81 |
| Harvest tractor: | | | | | | | |
| 135-horsepower tractor | .90 | 7.45 | 2.47 | 8.64 | 6.71 | 2.22 | 7.78 |
| 85-horsepower tractor | .29 | 4.69 | 1.78 | 7.90 | 1.36 | .52 | 2.29 |
| Total harvest tractor | N.A. | N.A. | N.A. | N.A. | 8.07 | 2.74 | 10.07 |
| Harvest machinery: | | | | | | | |
| Roller, 12-foot | .19 | N.A. | .31 | .79 | N.A. | .06 | .15 |
| Harvester, 2-row | .90 | N.A. | 8.32 | 19.34 | N.A. | 7.49 | 17.41 |
| Truck, self-unload | 2.50 | 5.38 | 3.31 | 7.45 | 13.45 | 8.28 | 18.63 |
| Bin piler | .30 | .40 | 6.25 | 9.80 | .12 | 1.88 | 2.94 |
| Scraper | .10 | N.A. | .40 | .79 | N.A. | .04 | .08 |
| Pickup truck | .25 | 3.36 | 2.15 | 3.80 | .84 | .54 | .95 |
| Total harvest machinery | N.A. | N.A. | N.A. | N.A. | 14.41 | 18.29 | 40.16 |

N.A. = Not applicable.

1/ From appendix table 2.

2/ Ownership and repair costs for the irrigation equipment are included in the land rental charge. Irrigation power is included as a direct cost item in the budget.

Appendix table 20--Russet processing potatoes: Estimated costs for growing and harvesting in southwest Idaho, 1980

| Cost item | Unit | Quantity per acre | Price or cost per unit | Cost per acre | Cost per cwt |
|---|---|---|---|---|---|
| | | | ----------Dollars---------- | | |
| Yield | Cwt | 342 | N.A. | N.A. | N.A. |
| Variable: | | | | | |
| Preharvest-- | | | | | |
| Custom bedding | Acre | 1 | 9.00 | 9.00 | 0.03 |
| Seed | Cwt | 20.24 | 6.00 | 121.44 | .36 |
| Seed treatment | Lbs. | 20 | .40 | 8.00 | .02 |
| Fertilizer custom application | Times | 2 | 4.50 | 9.00 | .03 |
| Nitrogen | Lbs. | 269 | .288 | 77.47 | .23 |
| Phosphorus | do. | 202 | .278 | 56.16 | .16 |
| Potassium | do. | 67 | .120 | 8.04 | .02 |
| Zinc | do. | 8 | .83 | 6.64 | .02 |
| Boron | do. | 1 | 3.00 | 3.00 | .01 |
| Manganese | do. | 1 | 1.13 | 1.13 | .00 |
| Herbicide: | | | | | |
| Metribuzin | Qt. | 1 | 20.25 | 20.25 | .06 |
| EPTC | do. | 2 | 5.75 | 11.50 | .03 |
| Insecticide: | | | | | |
| Aldicarb | Lbs. | 20 | 2.00 | 40.00 | .12 |
| Methamidophos | Pt. | 2 | 6.40 | 12.80 | .04 |
| Fungicide (Mancozeb) | Lbs. | 4 | 1.95 | 7.80 | .02 |
| Custom application | Times | 4 | 5.50 | 22.00 | .06 |
| Tractor fuel and lube | Acre | 1 | 15.97 | 15.97 | .05 |
| Tractor repair | do. | 1 | 5.44 | 5.44 | .02 |
| Machinery fuel and lube | do. | 1 | 5.93 | 5.93 | .02 |
| Machinery repair | do. | 1 | 10.03 | 10.03 | .03 |
| Irrigation power | do. | 1 | 25.00 | 25.00 | .07 |
| Operator labor | Hrs. | 3.02 | 4.60 | 13.89 | .04 |
| Irrigation labor | do. | 4.00 | 4.60 | 18.40 | .05 |
| Other labor | do. | .63 | 3.81 | 2.40 | .01 |
| Interest on operating capital (12.7 percent of preharvest variable cost for 6 months) | N.A. | N.A. | N.A. | 32.47 | .09 |
| Total preharvest 1/ | N.A. | N.A. | N.A. | 543.76 | 1.59 |

See footnotes at end of table.

Continued--

Appendix table 20--Russet processing potatoes: Estimated costs for growing and harvesting in southwest Idaho, 1980--Continued

| Cost item | Unit | Quantity per acre | Price or cost per unit | Cost per acre | Cost per cwt |
|---|---|---|---|---|---|
| | | | ----------Dollars---------- | | |
| Harvest-- | | | | | |
| Tractor fuel and lube | Acre | 1 | 8.81 | 8.81 | 0.02 |
| Tractor repair | do. | 1 | 2.99 | 2.99 | .01 |
| Machinery fuel and lube | do. | 1 | 17.10 | 17.10 | .05 |
| Machinery repair | do. | 1 | 20.77 | 20.77 | .06 |
| Operator labor | Hrs. | 5.74 | 4.60 | 26.40 | .08 |
| Other labor | do. | 2.88 | 3.81 | 10.97 | .03 |
| Total harvest 1/ | N.A. | N.A. | N.A. | 87.04 | .25 |
| Total variable 1/ | N.A. | N.A. | N.A. | 630.80 | 1.84 |
| Ownership (replacement taxes, insurance, interest): | | | | | |
| Tractors | Acre | 1 | 30.96 | 30.96 | .09 |
| Machinery | do. | 1 | 67.89 | 67.89 | .20 |
| Total ownership 2/ | N.A. | N.A. | N.A. | 98.85 | .29 |
| Other: | | | | | |
| Land charge (cash rent) 2/ | Acre | 1 | 250.00 | 250.00 | .73 |
| General farm overhead 3/ | do. | 1 | 20.00 | 20.00 | .06 |
| Inspection and potato promotion tax 4/ | do. | 1 | 18.16 | 18.16 | .05 |
| Association dues | do. | 1 | 4.0 | 4.00 | .01 |
| Management charge 5/ | do. | 1 | 77.18 | 77.18 | .23 |
| Total other 1/ | N.A. | N.A. | N.A. | 369.34 | 1.08 |
| Total 1/ | N.A. | N.A. | N.A. | 1,098.99 | 3.21 |

N.A. = Not applicable.

1/ Components may not add to totals because of rounding.

2/ The land charge is for land with irrigation equipment in place. Ownership and repair charges for irrigation facilities are included in the land charge.

3/ Includes telephone, legal, accounting, and other farm expenses not charged directly to potatoes.

4/ Includes 2.4 cents/cwt State assessment, 1 cent/cwt national assessment on production sold and 2.5 cents inspection fee.

5/ Ten percent of total cost minus land charge.

Appendix table 21--Russet processing potatoes: Estimated hours of equipment and labor for production and harvesting in southwest Idaho, 1980

| Operation | Equipment used | Times over | Equipment excluding tractor | Tractor (65-94 hp) | Tractor (125-150 hp) | Operator labor | Irrigation labor | Other labor |
|---|---|---|---|---|---|---|---|---|
| | | Number | Hours | | | | | |
| Preharvest: | | | | | | | | |
| Disking | Tandem disk, 13-foot | 3 | 0.54 | N.A. | 0.54 | 0.68 | N.A. | N.A. |
| Plowing | Moldboard plow, 4-bottom | 1 | .46 | N.A. | .46 | .58 | N.A. | N.A. |
| | Packer 6-foot in tandem with plow | 1 | .46 | N.A. | .46 | N.A. | N.A. | N.A. |
| Mark rows | Custom bedding | 1 | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Cut seed | Scooper | N.A. | .20 | N.A. | N.A. | .25 | N.A. | N.A. |
| | Seed cutter | N.A. | .20 | N.A. | N.A. | N.A. | N.A. | 0.25 |
| | Cutter-to-truck conveyor | N.A. | .20 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Hauling seed | Truck, self-unload | N.A. | .60 | N.A. | N.A. | .38 | N.A. | N.A. |
| Handling seed | Electric generator | N.A. | .10 | N.A. | N.A. | N.A. | N.A. | N.A. |
| | Truck-to-planter conveyor | N.A. | .10 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Planting | Planter, 4-row | 1 | .30 | N.A. | .30 | .38 | N.A. | .38 |
| Cultivate | Spiketooth harrow, 18-foot | 1 | .11 | 0.11 | N.A. | .13 | N.A. | N.A. |
| | Cultivator, 4-row | 2 | .50 | .50 | N.A. | .62 | N.A. | N.A. |
| Spray | Custom applied | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Irrigation | Solid set | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |
| Supervision | Pickup truck | N.A. | .75 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total preharvest | | N.A. | N.A. | 61 | 1.76 | 3.02 | 4.00 | .63 |
| Harvest: | | | | | | | | |
| Roll vines | Roller, 12-foot | 1 | .19 | .19 | N.A. | .24 | N.A. | N.A. |
| Harvesting | Harvester, 2-row | 1 | 1.00 | N.A. | 1.00 | 1.25 | N.A. | 2.50 |
| Hauling potatoes | Truck, self-unload | N.A. | 3.00 | N.A. | N.A. | 3.75 | N.A. | N.A. |
| Unload | Bin piler | N.A. | .30 | N.A. | N.A. | .38 | N.A. | .38 |
| | Scraper | N.A. | .10 | .10 | N.A. | .12 | N.A. | N.A. |
| Supervision | Pickup truck | N.A. | .25 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total harvest | | N.A. | N.A. | .29 | 1.00 | 5.74 | N.A. | 2.88 |

N.A. = Not applicable.

Appendix table 22--Russet processing potatoes: Estimated machinery and equipment costs per acre for production in southwest Idaho, 1980

| Cost item | Time used | Cost per hour 1/ | | | Total cost | | |
|---|---|---|---|---|---|---|---|
| | | Fuel and lube | Repairs | Owner-ship | Fuel and lube | Repairs | Owner-ship |
| | Hours | Dollars | | | | | |
| Preharvest tractor: | | | | | | | |
| 135-horsepower tractor | 1.76 | 7.45 | 2.47 | 8.64 | 13.11 | 4.35 | 15.21 |
| 85-horsepower tractor | .61 | 4.69 | 1.78 | 7.90 | 2.86 | 1.09 | 4.82 |
| Total preharvest tractor | N.A. | N.A. | N.A. | N.A. | 15.97 | 5.44 | 20.03 |
| Preharvest machinery: | | | | | | | |
| Moldboard plow, 4-bottom | .46 | N.A. | 1.61 | 3.81 | N.A. | .74 | 1.75 |
| Tandem disk, 13-foot | .54 | N.A. | 2.57 | 5.89 | N.A. | 1.39 | 3.18 |
| Packer, 6-foot | .46 | N.A. | .69 | 1.63 | N.A. | .32 | .75 |
| Scooper | .20 | .50 | 2.64 | 5.19 | .10 | .53 | 1.04 |
| Seed cutter | .20 | .10 | 2.99 | 9.05 | .02 | .60 | 1.81 |
| Cutter-to-truck conveyor | .20 | .10 | 1.95 | 4.70 | .02 | .39 | .94 |
| Electric generator | .10 | .40 | .30 | .71 | .04 | .03 | .07 |
| Truck-to-planter conveyor | .10 | N.A. | .92 | 2.22 | N.A. | .09 | .22 |
| Truck, self-unload | .60 | 5.38 | 3.31 | 7.45 | 3.23 | 1.99 | 4.47 |
| Planter, 4-row | .30 | N.A. | 6.37 | 12.61 | N.A. | 1.91 | 3.78 |
| Spiketooth harrow, 18-foot | .11 | N.A. | .54 | 1.24 | N.A. | .06 | .14 |
| Cultivator, 4-row | .50 | N.A. | .73 | 2.15 | N.A. | .37 | 1.08 |
| Pickup truck | .75 | 3.36 | 2.15 | 3.80 | 2.52 | 1.61 | 2.85 |
| Total preharvest machinery | N.A. | N.A. | N.A. | N.A. | 5.93 | 10.03 | 22.08 |
| Harvest tractor: | | | | | | | |
| 135-horsepower tractor | 1.00 | 7.45 | 2.47 | 8.64 | 7.45 | 2.47 | 8.64 |
| 85-horsepower tractor | .29 | 4.69 | 1.78 | 7.90 | 1.36 | .52 | 2.29 |
| Total harvest tractor | N.A. | N.A. | N.A. | N.A. | 8.81 | 2.99 | 10.93 |
| Harvest machinery: | | | | | | | |
| Roller, 12-foot | .19 | N.A. | .31 | .79 | N.A. | .06 | .15 |
| Potato harvester | 1.00 | N.A. | 8.32 | 19.34 | N.A. | 8.32 | 19.34 |
| Bin piler | .30 | .40 | 6.25 | 9.80 | .12 | 1.88 | 2.94 |
| Scraper | .10 | N.A. | .40 | .79 | N.A. | .04 | .08 |
| Truck, self-unload | 3.00 | 5.38 | 3.31 | 7.45 | 16.14 | 9.93 | 22.35 |
| Pickup truck | .25 | 3.36 | 2.15 | 3.80 | .84 | .54 | .95 |
| Total harvest machinery | N.A. | N.A. | N.A. | N.A. | 17.10 | 20.77 | 45.81 |

N.A. = Not applicable.
1/ From appendix table 2.

Appendix table 23--Round white processing potatoes: Estimated costs for growing and harvesting in the Minnesota-North Dakota Red River Valley, 1980

| Cost item | Unit | Quantity per acre | Price or cost per unit | Cost per acre | Cost per cwt |
|---|---|---|---|---|---|
| | | | ----------Dollars---------- | | |
| Yield | Cwt | 150 | N.A. | N.A. | N.A. |
| Variable: | | | | | |
| Preharvest-- | | | | | |
| Seed | Cwt | 14.4 | 4.50 | 64.80 | 0.43 |
| Anhydrous ammonia | Lbs. | 75 | .12 | 9.00 | .06 |
| Nitrogen | do. | 25 | .266 | 6.65 | .04 |
| Phosphorus | do. | 87 | .247 | 21.49 | .14 |
| Potassium | do. | 47 | .120 | 5.64 | .04 |
| Fungicide 3X | do. | 4.5 | 1.70 | 7.65 | .05 |
| Systemic insecticide (Aldicarb) | do. | 14 | 1.80 | 25.20 | .17 |
| Folier insecticide (Phosphamidon) | Pt. | 1 | 6.75 | 6.75 | .04 |
| Sprout inhibitor (MH) | Gal. | 1 | 9.00 | 9.00 | .06 |
| Seed treatment | Lbs. | 14.4 | .32 | 4.61 | .03 |
| Tractor fuel and lube | Acre | 1 | 9.64 | 9.64 | .06 |
| Tractor repair | do. | 1 | 3.39 | 3.39 | .02 |
| Machinery fuel and lube | do. | 1 | 5.38 | 5.38 | .04 |
| Machinery repair | do. | 1 | 9.43 | 9.43 | .06 |
| Operator labor | Hrs. | 2.01 | 4.65 | 9.35 | .06 |
| Other labor | do. | .70 | 4.14 | 2.90 | .02 |
| Interest on operating capital (12.7 percent of preharvest variable cost for 6 months) | N.A. | N.A. | N.A. | 12.76 | .09 |
| Total preharvest 1/ | N.A. | N.A. | N.A. | 213.64 | 1.42 |
| Harvest-- | | | | | |
| Defoliant (DNBP) | Gal. | .5 | 9.00 | 4.50 | .03 |
| Crop oil | do. | .25 | 6.00 | 1.50 | .01 |
| Tractor fuel and lube | Acre | 1 | 6.34 | 6.34 | .04 |
| Tractor repair | do. | 1 | 2.12 | 2.12 | .01 |
| Machinery fuel and lube | do. | 1 | 13.87 | 13.87 | .09 |
| Machinery repair | do. | 1 | 17.47 | 17.47 | .12 |
| Operator labor | Hr. | 5 | 4.65 | 23.25 | .16 |
| Other labor | do. | 2 | 4.14 | 8.28 | .06 |
| Total harvest 1/ | N.A. | N.A. | N.A. | 77.33 | .52 |
| Total variable 1/ | N.A. | N.A. | N.A. | 290.97 | 1.94 |

See footnotes at end of table.

Continued--

Appendix table 23--Round white processing potatoes: Estimated costs for growing and harvesting in the Minnesota-North Dakota Red River Valley, 1980--Continued

| Cost item | Unit | Quantity per acre | Price or cost per unit | Cost per acre | Cost per cwt |
|---|---|---|---|---|---|
| | | | ----------Dollars---------- | | |
| Ownership (replacement taxes, insurance, interest): | | | | | |
| Tractors | Acre | 1 | 19.84 | 19.84 | 0.13 |
| Machinery | do. | 1 | 57.01 | 57.01 | .38 |
| Total ownership 1/ | N.A. | N.A. | N.A. | 76.85 | .51 |
| Other: | | | | | |
| Land charge (cash rent) | Acre | 1 | 80.00 | 80.00 | .53 |
| General farm overhead 2/ | do. | 1 | 20.00 | 20.00 | .13 |
| Potato promotion tax 3/ | do. | 1 | 4.50 | 4.50 | .03 |
| Management charge 4/ | do. | 1 | 39.23 | 39.23 | .26 |
| Total other 1/ | N.A. | N.A. | N.A. | 143.73 | .96 |
| Total 1/ | N.A. | N.A. | N.A. | 511.55 | 3.41 |

N.A. = Not applicable.

1/ Components may not add to totals because of rounding.

2/ Includes telephone, legal, accounting, and other farm expenses not charged directly to potatoes.

3/ Includes 2 cents/cwt State assessment and 1 cent/cwt national assessment on production sold.

4/ Ten percent of total cost minus land charge.

Appendix table 24--Round white processing potatoes: Estimated hours of equipment and labor to perform each operation for production in the Minnesota-North Dakota Red River Valley, 1980

| Operation | Equipment used | Times over | Equipment excluding tractor | Tractor (65-94 hp) | Tractor (125-150 hp) | Tractor (205 hp) | Operator labor | Irrigation labor |
|---|---|---|---|---|---|---|---|---|
| | | Number | Hours | | | | | |
| Preharvest: | | | | | | | | |
| Soil preparation | Moldboard plow, 8-16" | 1 | 0.15 | N.A. | N.A. | 0.15 | 0.19 | N.A. |
| | Chisel plow, 24-foot | 1 | .10 | N.A. | N.A. | .10 | .12 | N.A. |
| | Springtooth harrow, 45-foot | 2 | .10 | N.A. | 10 | N.A. | .12 | N.A. |
| Apply fertilizer | Anyhydrous applicator, 24-foot | 1 | .12 | N.A. | .12 | N.A. | .15 | N.A. |
| Cut seed | Seed cutter | N.A. | .15 | N.A. | N.A. | N.A. | N.A. | 0.30 |
| | Bucket loader | N.A. | .15 | N.A. | N.A. | N.A. | .15 | N.A. |
| | Cutter-to-truck conveyor | N.A. | .15 | N.A. | N.A. | N.A. | N.A. | .15 |
| Handling seed | Electric generator | N.A. | .10 | N.A. | N.A. | N.A. | N.A. | N.A. |
| | Truck-to-planter conveyor | N.A. | .10 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Planting | Planter, 6-row | 1 | .20 | N.A. | .20 | N.A. | .25 | .25 |
| Hauling seed | Truck, self-unload | N.A. | .45 | N.A. | N.A. | N.A. | .28 | N.A. |
| Cultivate | Cultivator, 6-row | 2 | .33 | N.A. | .33 | N.A. | 42 | N.A. |
| Spray | Sprayer, 72-foot | 4 | .26 | .26 | N.A. | N.A. | .33 | N.A. |
| Supervision | Pickup truck | N.A. | .75 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total preharvest | | N.A. | N.A. | .26 | .75 | .25 | 2.01 | .70 |
| Harvest: | | | | | | | | |
| Defoliate | Sprayer, 72-foot | 1 | .07 | .07 | N.A. | N.A. | .08 | N.A. |
| Harvesting | Harvester, 2-row | 1 | .08 | N.A. | .80 | N.A. | 1.00 | 2.00 |
| Hauling potatoes | Truck, self-unload | 1 | 2.40 | N.A. | N.A. | N.A. | 3.00 | N.A. |
| Unload | Bin piler | N.A. | .30 | N.A. | N.A. | N.A. | .88 | N.A. |
| | Scraper | N.A. | .10 | .10 | N.A. | N.A. | .12 | N.A. |
| Supervision | Pickup truck | N.A. | .25 | N.A. | N.A. | N.A. | N.A. | N.A. |
| Total harvest | | N.A. | N.A. | .08 | .80 | .00 | 5.00 | 2.00 |

N.A. = Not applicable.

Appendix table 25--Round white processing potatoes: Description and estimated cost for equipment used in production in the Minnesota-North Dakota Red River Valley, 1980

| Cost item | New cost 1980 | Total depreciation 1/ | Annual use | Service life | Cost per hour | | |
|---|---|---|---|---|---|---|---|
| | | | | | Fuel and lube 2/ | Repair and maintenance 3/ | Total ownership 4/ |
| | -------Dollars------- | | -------Hours------- | | ----------Dollars---------- | | |
| Tractor, 205-horsepower | 61,000 | 43,005 | 600 | 6,000 | 11.32 | 4.31 | 15.07 |
| Tractor, 135-horsepower | 35,000 | 24,675 | 600 | 6,000 | 7.45 | 2.47 | 8.64 |
| Tractor, 85-horsepower | 25,200 | 20,286 | 400 | 6,000 | 4.69 | 1.78 | 7.90 |
| Moldboard plow, 8-16" | 7,500 | 4,380 | 360 | 1,200 | N.A. | 2.88 | 5.42 |
| Chisel plow, 24-foot | 6,400 | 4,314 | 240 | 1,200 | N.A. | 2.46 | 5.72 |
| Springtooth harrow, 45-foot | 5,900 | 3,977 | 240 | 1,200 | N.A. | 2.27 | 5.26 |
| Electric generator | 800 | 702 | 150 | 2,000 | .40 | .30 | .71 |
| Truck-to-planter conveyor | 2,500 | 2,192 | 150 | 2,000 | N.A. | .92 | 2.22 |
| Planter, 6-row | 21,300 | 18,680 | 150 | 2,000 | N.A. | 9.55 | 18.90 |
| Seed cutter | 10,200 | 8,945 | 150 | 2,000 | .10 | 2.99 | 9.05 |
| Cultivator, 6-row | 3,200 | 2,477 | 150 | 1,200 | N.A. | 1.23 | 3.63 |
| Sprayer, 72-foot | 12,000 | 9.876 | 200 | 2,000 | N.A. | 6.02 | 9.18 |
| Harvester, 2-row | 28,400 | 21.982 | 250 | 2,000 | N.A. | 8.32 | 19.34 |
| Truck, self-unload | 17,500 | 13.545 | 400 | 3.200 | 5.38 | 3.31 | 7.45 |
| Pickup truck | 7,100 | 4,785 | 400 | 2,000 | 3.36 | 2.15 | 3.80 |
| Anhydrous applicator | 2,000 | 1,722 | 100 | 1,200 | N.A. | 2.00 | 2.81 |
| Bucket loader | 10,000 | 7,120 | 350 | 2,000 | 2.42 | 2.93 | 5.77 |
| Cutter-to-truck conveyor | 5,300 | 4,648 | 150 | 2,000 | .10 | 1.95 | 4.70 |
| Bin piler | 17,000 | 12,104 | 350 | 2,000 | .40 | 6.25 | 9.80 |
| Scraper | 900 | 789 | 150 | 2,000 | N.A. | .40 | .79 |

N.A. = Not applicable.
Note: For footnotes, see appendix table 3.

Appendix table 26--Round white processing potatoes: Estimated machinery and equipment costs per acre for production in the Minnesota-North Dakota Red River Valley, 1980

| Cost item | Time Used | Cost per hour | | | Total cost | | |
|---|---|---|---|---|---|---|---|
| | | Fuel and lube | Repairs | Owner-ship | Fuel and lube | Repairs | Owner-ship |
| | Hours | Dollars | | | | | |
| Preharvest tractor: | | | | | | | |
| 205-horsepower tractor | 0.25 | 11.32 | 4.31 | 15.07 | 2.83 | 1.08 | 3.77 |
| 135-horsepower tractor | .75 | 7.45 | 2.47 | 8.64 | 5.59 | 1.85 | 6.48 |
| 85-horsepower tractor | .26 | 4.69 | 1.78 | 7.90 | 1.22 | .46 | 2.05 |
| Total preharvest tractor | N.A. | N.A. | N.A. | N.A. | 9.64 | 3.39 | 12.30 |
| Preharvest machinery: | | | | | | | |
| Moldboard plow, 8-16" | .15 | N.A. | 2.88 | 5.42 | N.A. | .43 | .81 |
| Chisel plow, 24-foot | .10 | N.A. | 2.46 | 5.72 | N.A. | .25 | .57 |
| Springtooth harrow, 45-foot | .10 | N.A. | 2.27 | 5.26 | N.A. | .23 | .53 |
| Anhydrous applicator, 24-foot | .12 | N.A. | 2.00 | 2.81 | N.A. | .24 | .34 |
| Bucket loader | .15 | 2.42 | 2.93 | 5.77 | .36 | .44 | .87 |
| Cutter-to-truck conveyor | .15 | .10 | 1.95 | 4.70 | .02 | .29 | .71 |
| Electric generator | .10 | .40 | .30 | .71 | .04 | .03 | .07 |
| Truck-to-planter conveyor | .10 | N.A. | .92 | 2.22 | N.A. | .09 | .22 |
| Potato planter, 6-row | .20 | N.A. | 9.55 | 18.90 | N.A. | 1.91 | 3.78 |
| Seed cutter | .15 | .10 | 2.99 | 9.05 | .02 | .45 | 1.36 |
| Cultivator, 6-row | .33 | N.A. | 1.23 | 3.63 | N.A. | .41 | 1.20 |
| Sprayer, 72-foot | .26 | N.A. | 6.02 | 9.18 | N.A. | 1.56 | 2.39 |
| Truck, self-unload | .45 | 5.38 | 3.31 | 7.45 | 2.42 | 1.49 | 3.35 |
| Pickup truck | .75 | 3.36 | 2.15 | 3.80 | 2.52 | 1.61 | 2.85 |
| Total preharvest machinery | N.A. | N.A. | N.A. | N.A. | 5.38 | 9.43 | 19.05 |
| Harvest tractor: | | | | | | | |
| 135-horsepower tractor | .80 | 7.45 | 2.47 | 8.64 | 5.96 | 1.98 | 6.91 |
| 85-horsepower tractor | .08 | 4.69 | 1.78 | 7.90 | .38 | .14 | .63 |
| Total harvest tractor | N.A. | N.A. | N.A. | N.A. | 6.34 | 2.12 | 7.54 |
| Harvest machinery: | | | | | | | |
| Sprayer, 72-foot | .07 | N.A. | 6.02 | 9.18 | N.A. | .42 | .64 |
| Harvester, 2-row | .80 | N.A. | 8.32 | 19.34 | N.A. | 6.66 | 15.47 |
| Truck, self-unload | 2.40 | 5.38 | 3.31 | 7.45 | 12.91 | 7.94 | 17.88 |
| Bin piler | .30 | .40 | 6.25 | 9.80 | .12 | 1.87 | 2.94 |
| Scraper | .10 | N.A. | .40 | .79 | N.A. | .04 | .08 |
| Pickup truck | .25 | 3.36 | 2.15 | 3.80 | .84 | .54 | .95 |
| Total harvest machinery | N.A. | N.A. | N.A. | N.A. | 13.87 | 17.47 | 37.96 |

N.A. = Not applicable.

## APPENDIX B-- STORAGE COSTS

Five different budgets were developed for the seven production areas studied. A single budget represented costs for storing processing potatoes in the Washington, south-central Idaho, and southwest Idaho areas. Separate budgets were developed for the other areas. Costs were based on 1980 prices.

Appendix table 27--Round white tablestock potatoes: Estimated storage costs in a 50,000-cwt house for 6 months, Maine, 1980 1/

| Cost item | Description | Total cost | Cost per cwt out of storage 1/ |
|---|---|---|---|
| | | ---------Dollars-------- | |
| Variable: | | | |
| Electricity | 85,000 kWh @ 0.035 cents/kWh | 2,975.00 | 0.063 |
| Propane gas | 1,345 gallons @ 85 cents/gallon | 1,143.25 | .024 |
| Cleaning | 1 time @ $300 | 300.00 | .006 |
| Insurance on crop in storage | 50,000 cwt @ $2.25 cwt x 0.005 | 562.50 | .012 |
| Building repair and maintenance | 0.6 percent of new cost ($180,000) | 1,080.00 | .023 |
| Equipment fuel and lube | From appendix table 30 | 723.20 | .015 |
| Equipment repair | From appendix table 30 | 683.80 | .014 |
| Equipment labor | 200 hrs. @ $4.31 per hour | 862.00 | .018 |
| Supervisory labor | 300 hrs. @ $5.99 per hour | 1,797.00 | .038 |
| Interest on operating capital | $10,126.75 @ 12.7 percent for 6 months | 643.05 | .014 |
| Interest on potato stocks 3/ | 50,000 cwt @ $2.25 per cwt x 12.7 percent for 6 months | 7,143.75 | .150 |
| Total variable 4/ | N.A. | 17,913.55 | .377 |
| Ownership: | | | |
| Building-- | | | |
| Replacement charge | Depreciated 90 percent over 20 years | 8,100.00 | .171 |
| Taxes | 1 percent of average investment | 376.20 | .008 |
| Insurance | 1 percent of new cost | 1,800.00 | .038 |
| Interest | 12.7 percent of average investment | 4,777.74 | .101 |
| Equipment | From appendix table 30 | 1,667.00 | .035 |
| Total ownership 4/ | N.A. | 16,720.94 | .352 |
| Other: | | | |
| General overhead | N.A. | 500.00 | .011 |
| Management charge | 10 percent of total cost | 3,513.45 | .074 |
| Total other 4/ | N.A. | 4,013.45 | .084 |
| Total 4/ | N.A. | 38,647.94 | .814 |

N.A. = Not applicable.
1/ Based on 50,000 cwt building costing $180,000 new.
2/ Shrinkage estimated at 5 percent giving 47,500 cwt of potatoes out of storage.
3/ Interest on total variable costs for growing and harvesting.
4/ Components may not add to totals because of rounding.

Appendix table 28--Round white tablestock potatoes: Estimated hours of equipment and labor to operate a 50,000 cwt storage, Maine, 1980

| Operation | Equipment used | Requirement per year | | |
|---|---|---|---|---|
| | | Equipment | Other labor | Supervisor labor |
| | | | Hours | |
| Loading out | Bucket loader | 160 | 200 | N.A. |
| Supervision | Pickup truck | 100 | N.A. | 300 |
| Total | N.A. | N.A. | 200 | 300 |

N.A. = Not applicable.

Appendix table 29--Round white tablestock potatoes: Estimated cost of equipment used in storage, Maine, 1980

| Cost item | New cost 1980 | Total depreciation 1/ | Annual use | Service life | Cost per hour | | |
|---|---|---|---|---|---|---|---|
| | | | | | Fuel and lube 2/ | Repair and maintenance 3/ | Total ownership 4/ |
| | -------Dollars------- | | -------Hours------- | | ----------Dollars---------- | | |
| Bucket loader, 600-pound capacity | 10,000 | 8,230 | 200 | 2,000 | 2.42 | 2.93 | 7.65 |
| Pickup truck | 7,100 | 5,290 | 300 | 2,000 | 3.36 | 2.15 | 4.43 |

Note: For footnotes, see appendix table 3.

Appendix table 30--Round white tablestock potatoes: Estimated machinery and equipment costs to operate a 50,000-cwt storage, Maine, 1980

| Cost item | Time Used | Cost per hour | | | Total cost | | |
|---|---|---|---|---|---|---|---|
| | | Fuel and lube | Repairs | Owner-ship | Fuel and lube | Repairs | Owner-ship |
| | Hours | ---------- | ---------- | Dollars | ---------- | ---------- | ---------- |
| Bucket loader | 160 | 2.42 | 2.93 | 7.65 | 387.20 | 468.80 | 1,224.00 |
| Pickup truck | 100 | 3.36 | 2.15 | 4.43 | 336.00 | 215.00 | 443.00 |
| Total | N.A. | N.A. | N.A. | N.A. | 723.20 | 683.80 | 1,667.00 |

N.A. = Not applicable.

Appendix table 31--Russet tablestock potatoes: Estimated storage cost in a 120,000-cwt house for 6 months, central Wisconsin, 1980 1/

| Cost item | Description | Total cost | Cost per cwt out of storage 2/ |
|---|---|---|---|
| | | ---------Dollars--------- | |
| Variable: | | | |
| Electricity | 214,200 kWh @ 3.5 cents/kWh | 7,497.00 | 0.066 |
| Cleaning | Chlorine, sprayer, labor | 750.00 | .007 |
| Sprout inhibitor | CIPC custom applied at 4 cents/cwt | 4,800.00 | .042 |
| Insurance on crop in storage | 120,000 cwt @ $1.81 per cwt x 0.005 | 1,086.00 | .010 |
| Building repair and maintenance | 0.6 percent of new cost ($340,000) | 2,040.00 | .018 |
| Equipment fuel and lube | From appendix table 34 | 471.00 | .004 |
| Equipment repair | From appendix table 34 | 1,547.00 | .014 |
| Equipment labor | 376 hrs. @ $4.67/hour | 1,755.92 | .015 |
| Supervisory labor | 300 hrs. @ $6.96/hour | 2,088.00 | .018 |
| Other labor | 188 hrs. @ $3.57/hour | 671.16 | .006 |
| Interest on operating capital | $22,706.08 @ 12.7 percent for 6 months | 1,441.84 | .013 |
| Interest on potato stocks 3/ | 120,000 cwt @ $1.81 per cwt x 12.7 percent for 6 months | 13,792.20 | .121 |
| Total variable 4/ | N.A. | 37,940.12 | .333 |
| Ownership: | | | |
| Building-- | | | |
| Replacement charge | $340,000 depreciated 90 percent over 20 years | 15,300.00 | .134 |
| Taxes | 1 percent of average investment | 710.60 | .006 |
| Insurance | 1 percent of new cost | 3,400.00 | .030 |
| Interest | 12.7 percent of average investment | 9,024.62 | .079 |
| Equipment | From appendix table 34 | 2,628.50 | .023 |
| Total ownership 4/ | N.A. | 31,063.72 | .272 |
| Other: | | | |
| General overhead | N.A. | 500.00 | .004 |
| Management charge | 10 percent of total cost | 6,950.38 | .061 |
| Total other 4/ | N.A. | 7,450.38 | .065 |
| Total 4/ | N.A. | 76,454.22 | .671 |

N.A. = Not applicable.

1/ Based on 120,000 cwt storage. Initial cost was estimated at $320,000 for the building and ventilation equipment plus $20,000 for air conditioning equipment.

2/ Based on 5-percent shrinkage giving 114,000 cwt of potatoes out of storage.

3/ Interest on total variable costs for growing and harvesting.

4/ Components may not add to totals because of rounding.

Appendix table 32--Russet tablestock potatoes: Estimated hours of equipment and labor to operate a 120,000-cwt storage, central Wisconsin, 1980

| Operation | Equipment used | Requirement per year | | | |
|---|---|---|---|---|---|
| | | Equipment | Equipment labor | Other labor | Supervisor labor |
| | | | Hours | | |
| Loading out | Potato scooper | 150 | 188 | 0 | 0 |
| | Piler | 150 | 188 | 188 | 0 |
| Supervision | Pickup truck | 100 | N.A. | 0 | 300 |
| Total | N.A. | N.A. | 376 | 188 | 300 |

N.A. = Not applicable.

Appendix table 33--Russet tablestock potatoes: Estimated cost of equipment used in storage, central Wisconsin, 1980

| Cost item | New cost 1980 | Total depreciation 1/ | Annual use | Service life | Cost per hour | | |
|---|---|---|---|---|---|---|---|
| | | | | | Fuel and lube 2/ | Repair and maintenance 3/ | Total ownership 4/ |
| | -------Dollars------- | | -------Hours------- | | ----------Dollars---------- | | |
| Potato scooper | 9,000 | 6,408 | 350 | 2,000 | .50 | 2.64 | 5.19 |
| Bin piler | 17,000 | 12,104 | 350 | 2,000 | .40 | 6.25 | 9.80 |
| Pickup truck | 7,100 | 4,785 | 400 | 2,000 | 3.36 | 2.15 | 3.80 |

Note: For footnotes, see appendix table 3.

Appendix table 34--Russet tablestock potatoes: Estimated machinery and equipment costs to operate a 120,000-cwt storage, central Wisconsin, 1980

| Cost item | Time used | Cost per hour | | | Total cost | | |
|---|---|---|---|---|---|---|---|
| | | Fuel and lube | Repairs | Owner-ship | Fuel and lube | Repairs | Owner-ship |
| | Hours | ---------- | ---------- | Dollars | ---------- | ---------- | ---------- |
| Potato scooper | 150 | .50 | 2.64 | 5.19 | 75.00 | 396.00 | 778.50 |
| Bin piler | 150 | .40 | 6.24 | 9.80 | 60.00 | 936.00 | 1,470.00 |
| Pickup truck | 100 | 3.36 | 21.57 | 3.80 | 336.00 | 215.00 | 380.00 |
| Total | N.A. | N.A. | N.A. | N.A. | 471.00 | 1,547.00 | 2,628.50 |

N.A. = Not applicable.

Appendix table 35--Russet tablestock potatoes: Estimated storage cost in a 8,000-ton house for 6 months, eastern Idaho, 1980

| Cost item | Description | Total cost | Cost per cwt out of storage 1/ |
|---|---|---|---|
| | | ---------Dollars--------- | |
| Variable: | | | |
| Electricity | 189,000 kWh @ 0.035 cents/kWh | 6,615.00 | 0.044 |
| Building repair and maintenance | 0.6 percent of new cost | 1,920.00 | .013 |
| Equipment fuel and lube | From appendix table 38 | 516.00 | .003 |
| Equipment repair and maintenance | From appendix table 38 | 1,993.00 | .013 |
| Equipment labor | 500 hrs. @ $4.89 per hour | 2,445.00 | .016 |
| Other labor | 250 hrs. @ $4.60 per hour | 1,150.00 | .008 |
| Supervisory labor | 300 hrs. @ $7.12 per hour | 2,136.00 | .014 |
| Sprout inhibitor | 160,000 cwt @ $0.04 per cwt | 6,400.00 | .042 |
| Insurance on crop in storage 2/ | 160,000 cwt @ $2.20 per cwt x 0.005 | 1,760.00 | .012 |
| Interest on operating capital | $24,935.00 @ 12.7 percent for 6 months | 1,583.37 | .010 |
| Interest on potato stocks 2/ 3/ | 160,000 cwt @ $2.20 per cwt x 12.7 percent for 6 months | 22,352.00 | .147 |
| Total variable 2/ | N.A. | 48,870.37 | .322 |
| Ownership: | | | |
| Building-- | | | |
| Replacement charge | $320,000 depreciated 90 percent over 20 years | 14,400.00 | .095 |
| Taxes | 1 percent of average investment | 668.80 | .004 |
| Insurance | 1 percent of new cost | 3,200.00 | .021 |
| Interest | 12.7 percent of average investment | 8,493.76 | .056 |
| Equipment | From appendix table 38 | 3,378.00 | .022 |
| Total ownership 3/ | N.A. | 30,140.56 | .198 |
| Other: | | | |
| General overhead | N.A. | 500.00 | .003 |
| Management charge | 10 percent of total cost | 7,951.09 | .052 |
| Total other 3/ | N.A. | 8,451.09 | .056 |
| Total 3/ | N.A. | 87,462.02 | .575 |

N.A. = Not applicable.
1/ Based on 5-percent shrinkage giving 152,000 cwt of potatoes out of storage.
2/ Interest on total variable costs for growing and harvesting.
3/ Components may not add to totals because of rounding.

Appendix table 36--Russet tablestock potatoes: Estimated hours of equipment and labor to operate an 8,000-ton storage, Idaho areas, 1980

| Operation | Equipment used | Requirement per year | | | |
|---|---|---|---|---|---|
| | | Equipment | Equipment labor | Other labor | Supervisor labor |
| | | | Hours | | |
| Loading out | Potato scooper | 200 | 250 | N.A. | N.A. |
| | Piler | 200 | 250 | 250 | N.A. |
| Supervision | Pickup truck | 100 | N.A. | N.A. | 300 |
| Total | N.A. | N.A. | 500 | 250 | 300 |

N.A. = Not applicable.

Appendix table 37--Russet tablestock potatoes: Estimated cost of equipment used in storage, eastern Idaho, 1980

| Cost item | New cost 1980 | Total depreciation 1/ | Annual use | Service life | Cost per hour | | |
|---|---|---|---|---|---|---|---|
| | | | | | Fuel and lube 2/ | Repair and maintenance 3/ | Total ownership 4/ |
| | -------Dollars------- | | -------Hours------- | | ----------Dollars---------- | | |
| Telescopic bin piler, 45' long, 24" wide | 17,000 | 12,104 | 350 | 2,000 | 0.40 | 6.25 | 9.80 |
| Potato scooper | 9,000 | 6,408 | 350 | 2,000 | .50 | 2.64 | 5.19 |
| Pickup truck | 7,100 | 4,785 | 400 | 2,000 | 3.36 | 2.15 | 3.80 |

Note: For footnotes, see appendix table 3.

Appendix table 38--Russet tablestock potatoes: Estimated machinery and equipment costs to operate an 8,000-ton potato storage, eastern Idaho, 1980

| Cost item | Time used | Cost per hour | | | Total cost | | |
|---|---|---|---|---|---|---|---|
| | | Fuel and lube | Repairs | Owner-ship | Fuel and lube | Repairs | Owner-ship |
| | Hours | ---------- | ---------- | Dollars | ---------- | ---------- | ---------- |
| Telescopic piler | 200 | 0.40 | 6.25 | 9.80 | 80.00 | 1,250.00 | 1,960.00 |
| Potato scooper | 200 | .50 | 2.64 | 5.19 | 100.00 | 528.00 | 1,038.00 |
| Pickup truck | 100 | 3.36 | 2.15 | 3.80 | 336.00 | 215.00 | 380.00 |
| Total | N.A. | N.A. | N.A. | N.A. | 516.00 | 1,993.00 | 3,378.00 |

N.A. = Not applicable.

Appendix table 39--Russet processing potatoes: Estimated storage cost in an 8,000-ton house for 6 months, Washington/Idaho areas, 1980

| Cost item | Description | Total cost | Cost per cwt out of storage 1/ |
|---|---|---|---|
| | | ---------Dollars-------- | |
| Variable: | | | |
| Electricity | 126,900 kWh @ 0.035 cents/kWh | 4,441.50 | 0.030 |
| Building repair and maintenance | 0.6 percent of new cost | 1,920.00 | .013 |
| Equipment fuel and lube | From appendix table 42 | 516.00 | .004 |
| Equipment repair and maintenance | From appendix table 42 | 1,993.00 | .014 |
| Equipment labor | 500 hrs. @ $4.89 per hour | 2,445.00 | .017 |
| Other labor | 250 hrs. @ $4.60 per hour | 1,150.00 | .008 |
| Supervising labor | 300 hrs. @ $7.12 per hour | 2,136.00 | .015 |
| Sprout inhibitor | 160,000 cwt @ 4 cents/cwt | 6,400.00 | .043 |
| Insurance on crop in storage 2/ | 160,000 cwt @ $1.91 per cwt x 0.005 | 1,528.00 | .010 |
| Interest on operating capital | $22,529.50 @ 12.7 percent for 6 months | 1,430.62 | .010 |
| Interest on potato stocks 2/ 3/ | 160,000 cwt @ $1.91 per cwt x 12.7 percent for 6 months | 19,405.60 | .132 |
| Total variable 4/ | N.A. | 43,365.72 | .295 |
| Ownership: | | | |
| Building-- | | | |
| Replacement charge | $320,000 depreciated 90 percent for 20 years | 14,400.00 | .098 |
| Taxes | 1 percent of average investment | 668.80 | .005 |
| Insurance | 1 percent of new cost | 3,200.00 | .022 |
| Interest | 12.7 percent of average investment | 8,493.76 | .058 |
| Equipment | From appendix table 42 | 3,378.00 | .023 |
| Total ownership 4/ | N.A. | 30,140.56 | .205 |
| Other: | | | |
| General overhead | N.A. | 500.00 | .003 |
| Management charge | 10 percent of total cost | 7,400.63 | .050 |
| Total other 4/ | N.A. | 7,900.63 | .054 |
| Total 4/ | N.A. | 81,406.91 | .553 |

N.A. = Not applicable.

1/ Based on 8-percent shrinkage giving 147,000 cwt of potatoes out of storage.

2/ Total variable cost represents the average of the Washington, south-central Idaho and southwest Idaho areas.

3/ Interest on total variable costs for growing and harvesting.

4/ Components may not add to totals because of rounding.

Appendix table 40--Russet processing potatoes: Estimated hours of equipment and labor to operate an 8,000-ton storage, Washington/Idaho areas, 1980

| Operation | Equipment used | Requirement per year | | | |
|---|---|---|---|---|---|
| | | Equipment | Equipment labor | Other labor | Supervisor labor |
| | | | Hours | | |
| Loading out | Potato scooper | 200 | 250 | N.A. | N.A. |
| | Piler | 200 | 250 | 250 | N.A. |
| Supervision | Pickup truck | 100 | N.A. | N.A. | 300 |
| Total | N.A. | N.A. | 500 | 250 | 300 |

N.A. = Not applicable.

Appendix table 41--Russet processing potatoes: Estimated cost of equipment used in storage, Washington/Idaho areas, 1980

| Cost item | New cost 1980 | Total depreciation 1/ | Annual use | Service life | Cost per hour | | |
|---|---|---|---|---|---|---|---|
| | | | | | Fuel and lube 2/ | Repair and maintenance 3/ | Total ownership 4/ |
| | -------Dollars------- | | -------Hours------- | | ----------Dollars---------- | | |
| Telescopic bin piler, 45' long, 24" wide | 17,000 | 12,104 | 350 | 2,000 | 0.40 | 6.25 | 9.80 |
| Potato scooper | 9,000 | 6,408 | 350 | 2,000 | .50 | 2.64 | 5.19 |
| Pickup truck | 7,100 | 4,785 | 400 | 2,000 | 3.36 | 2.15 | 3.80 |

Note: For footnotes, see appendix table 3.

Appendix table 42--Russet processing potatoes: Estimated equipment costs to operate an 8,000-ton storage, Washington/Idaho areas, 1980

| Cost item | Time used | Cost per hour | | | Total cost | | |
|---|---|---|---|---|---|---|---|
| | | Fuel and lube | Repairs | Owner-ship | Fuel and lube | Repairs | Owner-ship |
| | Hours | ---------- | ---------- | Dollars | ---------- | ---------- | |
| Telescopic piler | 200 | 0.40 | 6.25 | 9.80 | 80.00 | 1,250.00 | 1,960.00 |
| Potato scooper | 200 | .50 | 2.64 | 5.19 | 100.00 | 528.00 | 1,038.00 |
| Pickup truck | 100 | 3.36 | 2.15 | 3.80 | 336.00 | 215.00 | 380.00 |
| Total | N.A. | N.A. | N.A. | N.A. | 516.00 | 1,993.00 | 3,378.00 |

N.A. = Not applicable.

Appendix table 43--Round white processing potatoes: Estimated storage costs in a 48,000-cwt house (4 bins) for 6 months, Minnesota/North Dakota Red River Valley, 1980 1/

| Cost item | Description | Total cost | Cost per cwt out of storage 2/ |
|---|---|---|---|
| | | ---------Dollars-------- | |
| Variable: | | | |
| Electricity | 85,700 kWh @ 3.5 cents/kWh | 2,999.50 | 0.071 |
| Cleaning | Chlorine, sprayer, labor | 300.00 | .007 |
| Sprout inhibitor | CIPC custom applied at 7 cents/cwt | 3,360.00 | .080 |
| Insurance on crop in storage | 48,000 cwt @ $1.94 per cwt x 0.005 | 465.60 | .011 |
| Building repair and maintenance | 0.6 percent x new cost ($185,000) | 1,110.00 | .026 |
| Equipment fuel and lube | From appendix table 46 | 759.00 | .018 |
| Equipment repairs | From appendix table 46 | 1,590.50 | .038 |
| Equipment labor | 188 hrs. @ $4.66 per hour | 876.08 | .021 |
| Other labor | 376 hrs. @ $4.14 per hour | 1,556.64 | .037 |
| Supervisory labor | 300 hrs. @ $5.22 per hour | 1,566.00 | .037 |
| Interest on operating capital | $14,583.32 @ 12.7 percent for 6 months | 926.04 | .022 |
| Interest on potato stocks 3/ | 48,000 @ $1.94 per cwt x 12.7 percent for 6 months | 5,913.12 | .140 |
| Total variable 4/ | N.A. | 21,422.48 | .507 |
| Ownership: | | | |
| Building-- | | | |
| Replacement charge | $185,000 depreciated 90 percent over 20 years | 8,325.00 | .197 |
| Taxes | 1 percent of average investment | 386.65 | .009 |
| Insurance | 1 percent of new cost | 1,850.00 | .044 |
| Interest | 12.7 percent of average investment | 4,910.46 | .116 |
| Equipment | From appendix table 46 | 2,715.50 | .064 |
| Total ownership 4/ | N.A. | 18,187.61 | .431 |
| Other: | | | |
| General overhead | N.A. | 500.00 | .012 |
| Management charge | 10 percent of total costs | 4,011.01 | .095 |
| Total other 4/ | N.A. | 4,511.01 | .107 |
| Total 4/ | N.A. | 44,121.10 | 1.045 |

N.A. = Not applicable.

1/ Based on a 48,000-cwt storage having four 12,000-cwt bins with one refrigerated bin. Initial cost was estimated at $175,000 for the building and ventilation equipment plus $10,000 for air conditioning equipment. Budget does not include any selling costs except as they are included in general overhead for growing and storage.

2/ Shrinkage in storage estimated at 12 percent, or 42,240 cwt of potatoes out of storage.

3/ Interest on total variable costs for growing and harvesting.

4/ Components may not add to totals because of rounding.

Appendix table 44--Round white processing potatoes: Estimated hours of equipment and labor to operate a 48,000-cwt storage, Minnesota/North Dakota Red River Valley, 1980

| Operation | Equipment used | Requirement per year | | | |
|---|---|---|---|---|---|
| | | Equipment | Equipment labor | Other labor | Supervisor labor |
| | | | Hours | | |
| Loading out | Bucket loader | 150 | 188 | N.A. | N.A. |
| | Telescopic bin piler | 150 | N.A. | 376 | N.A. |
| Supervision | Pickup truck | 100 | N.A. | N.A. | 300 |
| Total | N.A. | N.A. | 188 | 376 | 300 |

N.A. = Not applicable.

Appendix table 45--Round white processing potatoes: Estimated cost of equipment used in storage, Minnesota-North Dakota Red River Valley, 1980

| Cost item | New cost 1980 | Total depreciation 1/ | Annual use | Service life | Cost per hour | | |
|---|---|---|---|---|---|---|---|
| | | | | | Fuel and lube 2/ | Repair and maintenance 3/ | Total ownership 4/ |
| | -------Dollars------- | | -------Hours------- | | ----------Dollars---------- | | |
| Telescopic bin piler, 45" long, 24" wide | 17,000 | 12,104 | 350 | 2,000 | 0.40 | 6.25 | 9.80 |
| Bucket loader | 10,000 | 7,120 | 350 | 2,000 | 2.42 | 2.93 | 5.77 |
| Pickup truck | 7,100 | 4,785 | 400 | 2,000 | 3.36 | 2.15 | 3.80 |

Note: For footnotes, see appendix table 3.

Appendix table 46--Round white processing potatoes: Estimated machinery and equipment costs to operate a 48,000-cwt storage in the Red River Valley, 1980

| Cost item | Time used | Cost per hour | | | Total cost | | |
|---|---|---|---|---|---|---|---|
| | | Fuel and lube | Repairs | Owner-ship | Fuel and lube | Repairs | Owner-ship |
| | Hours | ---------- | ---------- | Dollars | ---------- | ---------- | |
| Bucket loader | 150 | 2.42 | 2.93 | 5.77 | 363.00 | 439.50 | 865.50 |
| Bin piler | 150 | .40 | 6.24 | 9.80 | 60.00 | 936.00 | 1,470.00 |
| Pickup truck | 100 | 3.36 | 2.15 | 3.80 | 336.00 | 215.00 | 380.00 |
| Total | N.A. | N.A. | N.A. | N.A. | 759.00 | 1,590.50 | 2,715.50 |

N.A. = Not applicable.

## APPENDIX C--PACKING AND SELLING COSTS

Two budgets were developed for packing and selling costs--one for Maine potatoes packed with an in-storage packing line and one for packinghouse operations representative of potatoes packed in central Wisconsin or eastern Idaho. Packing and selling budgets include two additional tables beyond those included in the growing and harvesting and the storage budgets. The fifth table in each series shows the distribution of type and size of package selected as representative of the area, and shows how the packaging materials costs were derived. The sixth table in the series shows the daily labor cost for operating the packing operation.

Appendix table 47--Round white tablestock potatoes: Estimated costs for packing and selling, Maine, 1980/81 season

| Cost item | Description | Total cost | Cost per cwt packed out 1/ |
|---|---|---|---|
| | | ---------Dollars-------- | |
| Variable: | | | |
| Electricity | 700 kWh @ 3.5 cents/kWh | 24.50 | 0.020 |
| Fuel oil (heating) | 12 gallons @ $1.00/gallon | 12.00 | .010 |
| Labor | From appendix table 52 | 610.35 | .509 |
| Packing material | $0.744 per cwt (from appendix table 51) | 892.80 | .744 |
| Inspection fees | 25 percent of crop @ 13 cents/cwt | 39.00 | .033 |
| Liability insurance | N.A. | 7.50 | .006 |
| Water | N.A. | 12.00 | .010 |
| Drier fuel | Gas | 30.00 | .025 |
| Machinery repair and maintenance | From appendix table 50 | 47.20 | .039 |
| Other shed supplies and miscellaneous | N.A. | 50.00 | .042 |
| Total variable 2/ | N.A. | 1,725.35 | 1.438 |
| Ownership: | | | |
| Equipment (replacement, taxes, insurance, interest) | From appendix table 50 | 91.36 | .076 |
| Total ownership | N.A. | 91.36 | .076 |
| Other: | | | |
| General overhead (telephone, office supplies, legal, accounting, etc.) | N.A. | 20.00 | .017 |
| Management charge | 10 percent of total cost | 183.67 | .153 |
| Total other 2/ | N.A. | 203.67 | .170 |
| Total 2/ | N.A. | 2,020.38 | 1.684 |
| Selling | $0.25 per cwt | 300.00 | .250 |
| Total packing and selling 2/ | N.A. | 2,320.38 | 1.934 |

N.A. = Not applicable.
1/ 1,200 cwt packed out per day.
2/ Components may not add to totals because of rounding.

Appendix table 48--Round white tablestock potatoes: Estimated hours of equipment use for packing, Maine, 1980 1/

| Operation | Equipment used | Hourly requirement per cwt 2/ |
|---|---|---|
| | | Hours |
| Receive potatoes | Hopper, 75-cwt capacity | 8 |
| Eliminate smalls | Chain sizer, 24 inches wide | 8 |
| Wash | Washer-dryer, 36 inches wide | 8 |
| Grade | Roller sorting table, 30 inches wide | 8 |
| Size | Spool sizer, 30 inches wide | 8 |
| Bag | 2-head manual (for oversized potatoes) | 8 |
| | 10-head rotary | 8 |
| Baling | Baling unit | 8 |
| Loading | Conveyor, 20 feet long | 8 |

1/ Based on the packing line operating an average of 8.0 hours per day for 87.5 days per year.

2/ Represents volume of potatoes supplied per day. Net packout estimated at 80 percent of total volume handled or 1200 cwt per day packed out.

Appendix table 49--Round white tablestock potatoes: Estimated cost for equipment used in packing, Maine, 1980

| Cost item | Horsepower requirement | New cost 1980 | Total depreciation 1/ | Annual use | Service life | Cost per hour | |
|---|---|---|---|---|---|---|---|
| | | | | | | Repair and maintenance 3/ | Total ownership 4/ |
| | Horsepower | -------Dollars------- | | -------Hours--------- | | ----------Dollars---------- | |
| Hopper, 72-cwt capacity | 0.75 | 1,500 | 1,350 | 700 | 7,000 | 0.16 | 0.33 |
| Chain sizer, 24" wide | .5 | 3,000 | 2,700 | 700 | 10,500 | .32 | .54 |
| Washer-dryer, 36" wide | 1.0 | 5,500 | 4,950 | 700 | 7,000 | .59 | 1.23 |
| Roller sorting table, 30" wide | 1.0 | 1,600 | 1,440 | 700 | 7,000 | .17 | .35 |
| Spool sizer, 30" wide | .75 | 2,200 | 1,980 | 700 | 7,000 | .24 | .48 |
| Bagger, 2-head manual | .5 | 8,800 | 7,920 | 700 | 10,500 | .94 | 1.58 |
| Bagger, 10-head rotary | .5 | 25,000 | 22,500 | 700 | 7,000 | 2.68 | 5.57 |
| Baling unit | 1.0 | 6,600 | 5,940 | 700 | 10,500 | .71 | 1.19 |
| Conveyor, 20' long | .5 | 850 | 765 | 700 | 10,500 | .09 | .15 |

1/ Depreciated 90 percent of purchase price.
2/ 7.5 percent of initial cost per year divided by hours of annual use.
3/ Ownership costs include a replacement allowance and charges for interest, taxes, housing, and insurance. Hourly replacement allowance is derived by dividing total depreciation by hours of total service life. Annual interest was estimated at 12.7 percent and taxes at 2 percent of average actual investment. Housing and insurance were estimated at 2 percent of average new cost investment. Hourly interest, taxes, housing, and insurance were derived by dividing the annual charge by hours of annual use.

Appendix table 50--Round white tablestock potatoes: Estimated equipment costs to operate a packing line, Maine, 1980

| Cost item | Time used | Cost per hour | | Cost per day | |
|---|---|---|---|---|---|
| | | Repair and maintenance | Ownership | Repair and maintenance | Ownership |
| | Hours | Dollars | | | |
| Hopper | 8 | 0.16 | 0.33 | 1.28 | 2.64 |
| Chain sizer | 8 | .32 | .54 | 2.56 | 4.32 |
| Washer-dryer | 8 | .59 | 1.23 | 4.72 | 9.84 |
| Roller sorting table | 8 | .17 | .35 | 1.36 | 2.80 |
| Spool sizer | 8 | .24 | .48 | 1.92 | 3.84 |
| Bagger, 2-head manual | 8 | .94 | 1.58 | 7.52 | 12.64 |
| Bagger, 10-head manual | 8 | 2.68 | 5.57 | 21.44 | 44.56 |
| Baling unit | 8 | .71 | 1.19 | 5.68 | 9.52 |
| Conveyor | 8 | .09 | .15 | .72 | 1.20 |
| Total | N.A. | N.A. | N.A. | 47.20 | 91.36 |

N.A. = Not applicable.

Appendix table 51--Round white tablestock potatoes: Estimated cost for bags, boxes, and other packing supplies, Maine, 1980/81 season

| Package | Percentage of total pack | Cost |
|---|---|---|
| | Percent | Dollars/cwt |
| 50-pound paper bags | 40 | 0.39 |
| Paper bags: | | |
| 5-pound window, baled | 4 | 1.90 |
| 10-pound window, baled | 16 | 1.12 |
| 10-pound window, loose | 16 | .89 |
| 20-pound window | 10 | .71 |
| Polybags: | | |
| 5-pound | 7 | .90 |
| 10-pound | 7 | .80 |
| Weighted average | N.A. | .744 |

N.A. = Not applicable.

Appendix table 52--Round white tablestock potatoes: Estimated daily labor costs for packing, Maine, 1980/81 season

| Type of labor | Description | Cost per 8-hour day of operation 1/ |
|---|---|---|
| | | Dollars per day |
| Foreman | 1 @ 9 hours/day @ $6/hour | 54.00 |
| Mechanic | 1 @ 9 hours/day @ $6/hour | 54.00 |
| Bookkeeper (part-time) | $17.25/day | 17.25 |
| Packing and grading: | | |
| Grading | 4 @ 9 hours/day @ $3.85/hour | 138.60 |
| Packing | 8 @ 9 hours/day @ $3.85/hour | 277.20 |
| Loading | 2 @ 9 hours/day @ $3.85/hour | 69.30 |
| Total | N.A. | 610.35 |

N.A. = Not applicable.
1/ Includes wages plus 15-percent labor benefits.

Appendix table 53--Russet tablestock potatoes: Estimated costs for packing and selling, Idaho and central Wisconsin, 1980/81 season

| Cost item | Description | Cost per day | Cost per cwt packed out 1/ |
|---|---|---|---|
| | | ---------Dollars-------- | |
| Variable: | | | |
| Electricity | 1,950 kWh @ 3.5 cents/kWh | 68.25 | 0.024 |
| Fuel oil (heating) | 60 gallons @ $1.00/gallon | 60.00 | .021 |
| Drier fuel | Gas | 70.00 | .024 |
| Water | N.A. | 28.00 | .010 |
| Labor | From appendix table 58 | 1,399.69 | .489 |
| Packaging material | $0.719 per cwt (appendix table 57) | 2,056.34 | .719 |
| Inspection fees | $0.04 per cwt packed | 114.40 | .040 |
| Liability insurance | N.A. | 18.00 | .006 |
| Equipment rental | Forklift | 20.00 | .007 |
| Machinery fuel and lube | From appendix table 56 | 129.12 | .045 |
| Machinery repair and maintenance | From appendix table 56 | 180.48 | .063 |
| Other shed supplies and miscellaneous | N.A. | 135.00 | .047 |
| Potato promotion assessment | 1.5 cents/cwt | 42.90 | .015 |
| Building repair and maintenance | 4 percent of new cost ($150,000) ÷ 180 days | 33.33 | .012 |
| Total variable 2/ | N.A. | 4,355.51 | 1.523 |
| Ownership: | | | |
| Building-- | | | |
| Replacement charge | $150,000 depreciated 90 percent over 20 years ÷ 180 days | 37.50 | .013 |
| Taxes | 1 percent of average investment ÷ 180 days | 1.74 | .001 |
| Property insurance | 1 percent of new cost ÷ 180 days | 8.33 | .003 |
| Interest | 12.7 percent of average investment ÷ 180 days | 22.12 | .008 |
| Equipment | From appendix table 56 | 354.96 | .124 |
| Total ownership 2/ | | 424.65 | .148 |
| Other: | | | |
| General overhead (telephone, office supplies, legal) | N.A. | 40.00 | .014 |
| Management charge | 10 percent of total cost | 482.02 | .169 |
| Total other 2/ | N.A. | 522.02 | .183 |
| Total 2/ | N.A. | 5,302.18 | 1.854 |
| Selling | $0.25 per cwt | 715.00 | .250 |
| Total packing and selling 2/ | N.A. | 6,017.18 | 2.104 |

N.A. = Not applicable.
1/ 2,860 cwt packed out per day.
2/ Components may not add to totals because of rounding.

Appendix table 54--Russet tablestock potatoes: Estimated hours of equipment use for packing, Idaho and central Wisconsin, 1980 1/

| Operation | Equipment used | Hourly requirement per 4,400 cwt 2/ |
|---|---|---|
| | | Hours |
| Hauling potatoes | Self-unloading truck | 16 |
| | Holding bin | 8 |
| Receive potatoes | 40" x 2' vertical lift | 8 |
| | 36" x 6' conveyor belt | 8 |
| Eliminate smalls | 36" screen sizer with 12" x 6" "B" conveyor | 8 |
| Wash and dry | 36" washer | 8 |
| | 36" sponge dryer | 8 |
| Grade | 36" x 10' grading table | 8 |
| Handle culls | 12" x 6' cull conveyor | 8 |
| | 12" x 25' cull elevator | 8 |
| | Cull holding bin | 8 |
| | Self-unloading truck | 9 |
| Size | Expanding roll sizer | 8 |
| | 48" x 15' distribution belt | 8 |
| Packaging | McClusky bagger (50- and 100-lb. bags) | 8 |
| | 16 head automatic bagger (5, 10 and 20 lb. bags) | 8 |
| | Photo weight sizer (50-lb. count cartons) | 8 |
| | Sewing line | 8 |
| | Bag closer | 8 |
| Baling | Accumulating table | 8 |
| | Baler bag holder | 8 |
| | Baler bag closer | 8 |
| | Check scale | 8 |
| Loading | Conveyor to truck | 8 |

1/ Based on a 36-inch wash and packing line operating 8 hours per day for 180 days per year.

2/ Represents volume of potatoes supplied per day. Net packout of Number 1's estimated at 65 percent, or 2,860 cwt packed out per day.

Appendix table 55--Russet tablestock potatoes: Estimated cost of equipment used, Idaho and central Wisconsin, 1980

| Cost item | Horsepower requirement | New cost 1980 | Total depreciation 1/ | Annual use | Service life | Cost per hour | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Fuel and lube 2/ | Repair and maintenance 3/ | Total ownership 4/ |
| | Horsepower | -----Dollars----- | | ------Hours----- | | ----------Dollars---------- | | |
| Vertical lift, 40" x 20" | 7.5 | 8,100 | 7,290 | 1,440 | 12,000 | N.A. | 0.56 | 0.98 |
| Conveyor belt, 36" x 6' | 1.0 | 1,700 | 1,530 | 1,440 | 12,000 | N.A. | .12 | .21 |
| Screen sizer, 36" with 12" x 6' conveyor | .50 | 3,900 | 3,510 | 1,440 | 12,000 | N.A. | .27 | .47 |
| Washer, 36" | 2.0 | 5,300 | 4,770 | 1,440 | 12,000 | N.A. | .37 | .64 |
| Sponge dryer, 36" | 2.0 | 6,100 | 5,490 | 1,440 | 12,000 | N.A. | .42 | .74 |
| Grading table, 36" x 10' | 1.5 | 3,400 | 3,060 | 1,440 | 12,000 | N.A. | .24 | .42 |
| Cull conveyor, 12' x 6' | .75 | 1,100 | 990 | 1,440 | 12,000 | N.A. | .08 | .13 |
| Cull elevator, 12" x 25' | 1.50 | 2,800 | 2,520 | 1,440 | 12,000 | N.A. | .19 | .34 |
| Cull holding bin | N.A. | 4,000 | 3,600 | 1,440 | 12,000 | N.A. | .28 | .48 |
| Truck, self-unload | N.A. | 17,500 | 13,545 | 1,400 | 3,200 | 5.38 | 3.31 | 7.45 |
| Expanding roll sizer | .75 | 12,800 | 11,520 | 1,440 | 12,000 | N.A. | .89 | 1.55 |
| Distribution unit, 48" x 15' | 2.0 | 2,500 | 2,250 | 1,440 | 12,000 | N.A. | .17 | .30 |
| McClusky bagger | 2.0 | 21,500 | 19,350 | 1,440 | 12,000 | N.A. | 1.49 | 2.60 |
| Automatic bagger, 16 head | 3.0 | 31,600 | 28,440 | 1,440 | 12,000 | N.A. | 2.19 | 3.82 |
| Photo weight sizer | 1.5 | 42,400 | 38,160 | 1,440 | 12,000 | N.A. | 2.94 | 5.12 |
| Sewing line | 2.0 | 6,900 | 6,210 | 1,440 | 12,000 | N.A. | .48 | .84 |
| Bag closer | .30 | 2,500 | 2,250 | 1,440 | 12,000 | N.A. | .17 | .30 |
| Accumulating table | .75 | 3,600 | 3,240 | 1,440 | 12,000 | N.A. | .25 | .43 |
| Baler bag holder | N.A. | 1,000 | 900 | 1,440 | 12,000 | N.A. | .07 | .14 |
| Baler bag closer | .30 | 6,900 | 6,210 | 1,440 | 12,000 | N.A. | .48 | .84 |
| Check scale | N.A. | 700 | 630 | 1,440 | 12,000 | N.A. | 05 | .08 |
| Conveyor to truck | 2.0 | 9,200 | 8,280 | 1,440 | 12,000 | N.A. | .64 | 1.11 |
| Holding bin | N.A. | 4,000 | 3,600 | 1,440 | 12,000 | N.A. | .28 | .48 |

N.A. = Not applicable.

1/ Self-unloading truck depreciated according to procedures used in growing and harvesting budget. Other equipment depreciated 90 percent of purchase price.

Appendix table 56--Russet tablestock potatoes: Estimated equipment costs to operate a packinghouse, eastern Idaho and central Wisconsin, 1980

| Cost item | Time used | Cost per hour | | | Cost per day | | |
|---|---|---|---|---|---|---|---|
| | | Fuel and lube | Repairs | Owner-ship | Fuel and lube | Repairs | Owner-ship |
| | Hours | Dollars | | | | | |
| Holding bin | 8 | N.A. | 0.28 | 0.48 | N.A. | 2.24 | 3.84 |
| Vertical lift | 8 | N.A. | .56 | .98 | N.A. | 4.48 | 7.84 |
| Conveyor belt | 8 | N.A. | .12 | .21 | N.A. | .96 | 1.68 |
| Screen sizer | 8 | N.A. | .27 | .47 | N.A. | 2.16 | 3.76 |
| Washer | 8 | N.A. | .37 | .64 | N.A. | 2.96 | 5.12 |
| Sponge dryer | 8 | N.A. | .42 | .74 | N.A. | 3.36 | 5.92 |
| Grading table | 8 | N.A. | .24 | .42 | N.A. | 1.92 | 3.36 |
| Cull conveyor | 8 | N.A. | .08 | .13 | N.A. | .64 | 1.04 |
| Cull elevator | 8 | N.A. | .19 | .34 | N.A. | 1.52 | 2.72 |
| Cull holding bin | 8 | N.A. | .28 | .48 | N.A. | 2.24 | 3.84 |
| Self-unloading truck | 24 | 5.38 | 3.31 | 7.45 | 129.12 | 79.44 | 178.80 |
| Expanding roll sizer | 8 | N.A. | .89 | 1.55 | N.A. | 7.12 | 12.40 |
| Distribution unit | 8 | N.A. | .17 | .30 | N.A. | 1.36 | 2.40 |
| McClusky bagger | 8 | N.A. | 1.49 | 2.60 | N.A. | 11.92 | 20.80 |
| Automatic bagger, 16-head | 8 | N.A. | 2.19 | 3.82 | N.A. | 17.52 | 30.56 |
| Photo weight sizer | 8 | N.A. | 2.94 | 5.12 | N.A. | 23.52 | 40.96 |
| Sewing line | 8 | N.A. | .48 | .84 | N.A. | 3.84 | 6.72 |
| Bag closer | 8 | N.A. | .17 | .30 | N.A. | 1.36 | 2.40 |
| Accumulating table | 8 | N.A. | .25 | .43 | N.A. | 2.00 | 3.44 |
| Baler bag holder | 8 | N.A. | .07 | .14 | N.A. | .56 | 1.12 |
| Baler bag closer | 8 | N.A. | .48 | .84 | N.A. | 3.84 | 6.72 |
| Check scales | 8 | N.A. | .05 | .08 | N.A. | .40 | .64 |
| Conveyor-to-truck | 8 | N.A. | .64 | 1.11 | N.A. | 5.12 | 8.88 |
| Total | N.A. | N.A. | N.A. | N.A. | 129.12 | 180.48 | 354.96 |

N.A. = Not applicable.

Appendix table 57--Russet tablestock potatoes: Estimated cost for bags, boxes, and other packing supplies, Idaho and central Wisconsin, 1980/81 season

| Package | Percentage of total pack | Cost |
|---|---|---|
| | Percent | Dollars/cwt |
| 100-pound burlap bags | 14 | 0.53 |
| 50-pound bags | 4 | .53 |
| 50-pound cartons | 25 | .86 |
| Polybags: | | |
| 5-pound | 6 | 1.05 |
| 10-pound | 12 | .64 |
| 15-pound | 26 | .52 |
| 20-pound | 8 | .50 |
| Mesh bags: | | |
| 5-pound | 2 | 2.40 |
| 10-pound | 3 | 1.52 |
| Weighted average | N.A. | .719 |

N.A. = Not applicable.

Appendix table 58--Russet tablestock potatoes: Estimated daily labor costs for packing, Idaho and central Wisconsin, 1980/81 season

| Type of labor | Description | Cost per 8-hour day of operation 1/ |
|---|---|---|
| | | Dollars per day |
| Foreman | $20,000/year ÷ 180-day packing season | 111.11 |
| Mechanic | $20,000/year ÷ 180-day packing season | 111.11 |
| Bookkeeper (full-time) | $13,000/year ÷ 180-day packing season | 72.22 |
| Bookkeeper (part-time) | $17.25/day | 17.25 |
| Packing and grading: | | |
| Truck driver | 3 @ 8 hours/day @ $5/hour | 120.00 |
| Receiving | 2 @ 8 hours/day @ $4/hour | 64.00 |
| Grading | 8 @ 8 hours/day @ $4/hour | 256.00 |
| Boxmaker | 1 @ 8 hours/day @ $4/hour | 32.00 |
| Cartons | 6 @ 8 hours/day @ $4/hour | 192.00 |
| Packaging | 10 @ 8 hours/day @ $4/hour | 320.00 |
| Loading truck | 2 @ 8 hours/day @ $4/hour | 64.00 |
| Lift truck | 1 @ 8 hours/day @ $5/hour | 40.00 |
| Total | N.A. | 1,399.69 |

N.A. = Not applicable.
1/ Includes wages plus 15-percent labor benefits.

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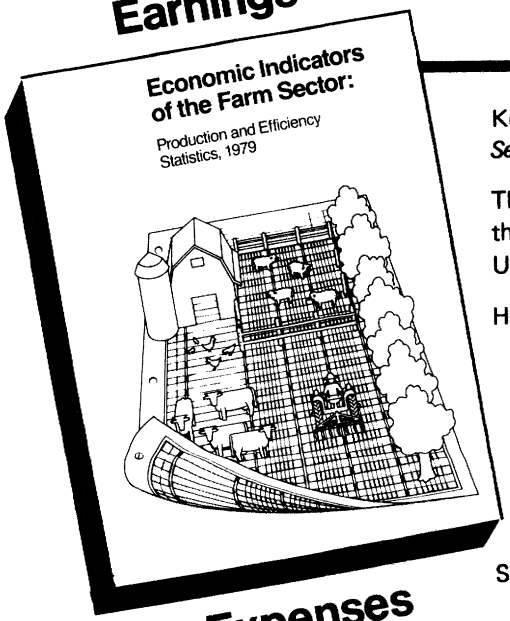


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